BNE AUTO MALL

MAJOR DEVELOPMENT PLAN

23 April 2020

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Executive Summary

Brisbane Airport Corporation Pty Ltd has prepared this Major Development Plan for the construction and operation of the BNE Auto Mall. The BNE Auto Mall will include a performance track, flagship automotive dealerships, brand experience centres and track operations and management centre. It will be designed to operate day and night, seven (7) days a week, offering a variety of experiences and opportunities for both the visiting public as well as the on-site tenants and workers.

The automotive performance track is envisaged to host events such as:

- Corporate driving events;
- Shared test drive days;
- Motorbike test days;
- Driving experience days;
- Driver training days;
- 4WD training days; and
- Special and major event days.

The automotive dealerships and brand experience centres will be located around the perimeter of the performance track to create a new landmark destination and will generate significant economic and social activity for Brisbane Airport.

The Project site is 51.3 hectares of undeveloped land enclosed by Moreton Drive, Airport Drive and Nancy Bird Way and located in close proximity to the Brisbane Airport's International Terminal. Preparatory works are currently underway, having commenced in 2017, and are due for completion in 2020.

BAC, as the Airport Lessee Company under the Airports Act 1996, is responsible for the submission of this Major Development Plan.

Key Findings

An assessment of the operational and environmental considerations from the BNE Auto Mall was conducted. The development will create significant commercial activities (including automotive dealerships and brand experience centres), which are expected to generate direct employment opportunities.

It was identified that the BNE Auto Mall will have negligible negative impact on operational, environmental and/or social factors, with the exception of those matters identified below. Where separate matters have been identified as having the potential to generate more than negligible impacts, it is considered that these impacts can be mitigated through deliberate scheduling of developments and appropriate design and construction.

The key findings of the assessment are outlined below.

Ground Transport

The construction and operation of the BNE Auto Mall will directly and indirectly create a number of job opportunities and therefore generate additional vehicle movements near to the Project site. The additional number of vehicle movements likely to be generated during construction are not considered significant enough to cause adverse impacts on the network and as such, traffic impacts associated with construction of the proposed development will be **negligible**.

For the operation of the BNE Auto Mall, a suitable level of car park rates will be adopted across each tenancy with a suitable mix of staff and visitor parking as well as temporary parking for special and major events. An analysis of the two access points into the Auto Mall (from Airport Drive and Nancy Bird Way) determined that there would be no discernible impact on the external road network

Specific lot layouts detailing car parking spaces, aisle and circulation road dimensions will be developed at the detailed design stage of the Project. As a consequence of the proposed improvements, traffic impacts associated with the operation of the proposed development will be **low**.

Aviation Operations and Safety

There are a number of operational restrictions within the BNE Auto Mall due to prescribed airspaces:

- OLS surface elevation varies across the BNE Auto Mall from 35 m AHD to 47.5 m AHD as a result of Brisbane's New Runway;
- Wind shear assessment zone from the existing runway has a surface elevation rising from 34.7 m AHD to 39.0 m AHD across the development area; and
- Lighting options and arrangements, as well as any large digital advertising, will be required to be investigated during detailed design by an experienced lighting designer.

The assessment of the potential aviation operational and safety impacts concluded that any impacts will be **negligible** due to both the location and the scale of development planned.

Acoustics

Sound level predictions for nine 'typical' operational scenarios for the BNE Auto Mall has been undertaken and compared against the daytime and evening noise level criteria for a series of locations near the Project site. The locations were selected to include the nearest affected sensitive and commercial receptors.

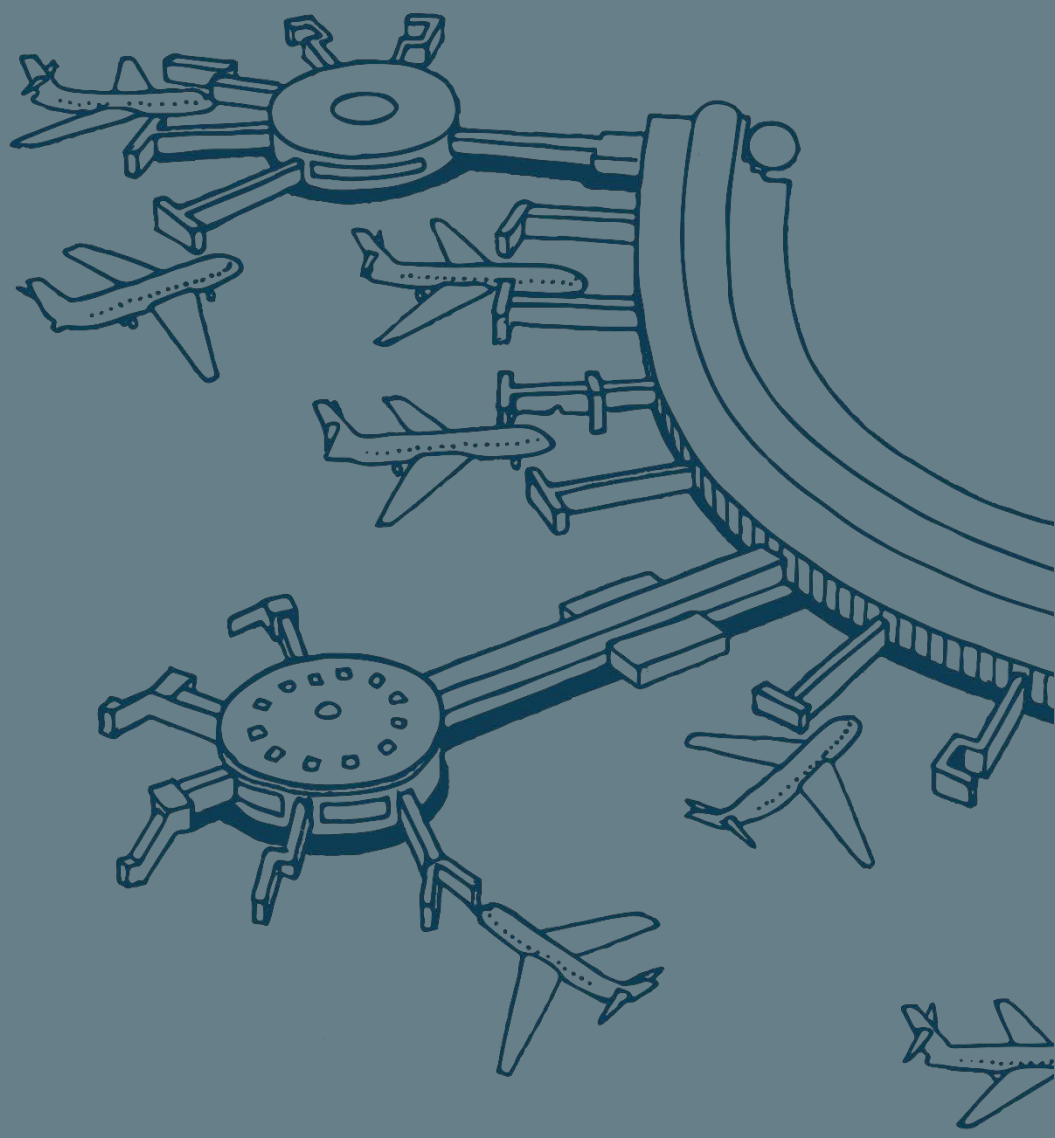
While minor noise level exceedances have been predicted for seven locations, there are no exceedances beyond the extent of the Brisbane Airport. As such, noisy activities are considered to be heard in the context of what is already a high noise environment and there are no predicted noise level exceedances to surrounding residential areas.

A comprehensive list of best practice noise mitigation measures are considered appropriate to mitigate potential noise impacts associated with the construction and operation of the BNE Auto Mall. As such, the potential noise impacts for the construction phase is considered **negligible** and for the operation phase is considered **low**.

Environment

The assessment considered a range of environmental matters to evaluate potential impacts associated with the construction and operation of the BNE Auto Mall. Of particular note to the BNE Auto Mall were the following considerations:

- During construction, loss of topsoil and sedimentation of drainage lines and watercourses due to inadequate erosion and sediment control measures and high rainfall incidence may result in a **low** impact; and
- During operations, storage and use of fuels, oils, solvents and other potentially hazardous chemicals as a result of testing and maintaining vehicles may occur at the BNE Auto Mall. These activities may result in soil and/or groundwater contamination, particularly if incorrectly used or stored, thereby resulting in a **low** risk.



1

INTRODUCTION

1. Introduction

1.1 Background

Brisbane Airport Corporation Pty Ltd (BAC) is the operator of Brisbane Airport which serves as the premier gateway to Queensland. Brisbane Airport currently operates one runway, with a second runway to open in 2020. Brisbane Airport currently consists of two major Terminals, accommodating 35 airlines flying to 84 domestic and international destinations. Brisbane Airport is the largest capital city airport in Australia by land size with 2,700 hectares (ha) of land and is located approximately 12 km from the Brisbane central business district (CBD).

BAC's extensive landholding in close proximity to Brisbane CBD offers a unique planning opportunity to capitalise on Brisbane Airport's aim to become a major multimodal transport hub and provide world class commercial opportunities. Over the last three decades, Brisbane Airport has seen substantial growth and diversification of land uses to complement its ongoing development and function. This growth has led to the creation of distinct precincts and characteristics within the local environment.

BAC has commenced work on its latest broad scale development – the BNE Auto Mall (the Project). The Project aims to deliver a multi-purpose auto retailing hub that sees flagship automotive dealerships (dealerships) sitting alongside brand experience centres and a multi-purpose automotive performance track (performance track).

The first phase of site preparatory works involved the clearing, filling and surcharging of the Project site. BAC prepared and submitted an Environmental Assessment Report (EAR), which was endorsed by the former Department of Infrastructure and Regional Development (DIRD) to manage potential environmental issues and impacts associated with these preparatory works, including clearing, earthworks and surcharging. The preparatory works are currently underway to deliver an improved Project site that has been cleared and filled (as per Section 2.8).

At completion, the preparatory works and BNE Auto Mall will deliver:

- A cleared, filled, surcharged and serviced site of 51.3 ha of developable land, that will accommodate a range of land uses;
- Fully serviced and landscaped roadways providing access and connections to Airport Drive and Nancy Bird Way;
- A range of automotive dealerships and brand experience centres; and
- A multi-purpose performance track.

1.2 Purpose and Objectives

The BNE Auto Mall is set to be Australia's benchmark automotive precinct designed for new and used car buyers, motoring enthusiasts and the public. This Major Development Plan (MDP) has been prepared for the construction and operation of the BNE Auto Mall.

Under the *Airports Act 1996* (Airports Act), section 91 (1A) states that:

…the purpose of an MDP in relation to an airport is to establish the details of a major airport development that:

(a) relates to the airport; and

(b) is consistent with the airport lease for the airport and the final master plan for the airport.

An MDP must be prepared by the airport-lessee company in accordance with the contents outlined in section 91 of the Airports Act and submitted to the Minister for Infrastructure, Transport and Regional Development (the Minister) for approval. Accordingly, this MDP outlines the:

- Details of the development including design considerations, supported infrastructure and staging;
- Legislative requirements; and
- Operational and environment assessment.

1.3 Report Structure

The structure of this MDP is shown in Table 1.

Table 1 MDP Structure

Section number	Aspects addressed in this MDP	Overview of section
1	Introduction	• Background • Purpose and objectives • Report structure • Project proponent
2	Project description	• Project summary • Project justification • Location of proposed development • Proposed land uses • Design considerations • Civil infrastructure • Project Development stages • Consistency with the Environmental Assessment Report
3	Legislative context	• Consistency with Commonwealth legislation • Pre-existing Airport Land • Consistency with Airport Lease • Consistency with Brisbane Airport Master Plan • Consistency with State and Local Government legislation and planning documents • Airport development and building approvals
4	Operational and environmental assessment methodology	• Assessment scope • Assessment method • Assessment results and commitments
5	Operational assessment	• Ground transport • Aviation operations and safety • Other infrastructure and services
6	Environmental assessment	• Geology, soils and topography • Ecology • Hydrology and water quality • Air quality and odour • Noise and vibration

Section number	Aspects addressed in this MDP	Overview of section
		• Land use • Landscape • Social and economic issues • Cultural heritage • Waste • Hazardous materials and dangerous goods
7	Building sustainability	• Summary of the key sustainability initiatives that are being investigated as part of the design
8	Summary of impacts	• Summary of the potential operational, environmental and social impacts associated with the proposal
9	References	• List of references that have been used to development the MDP

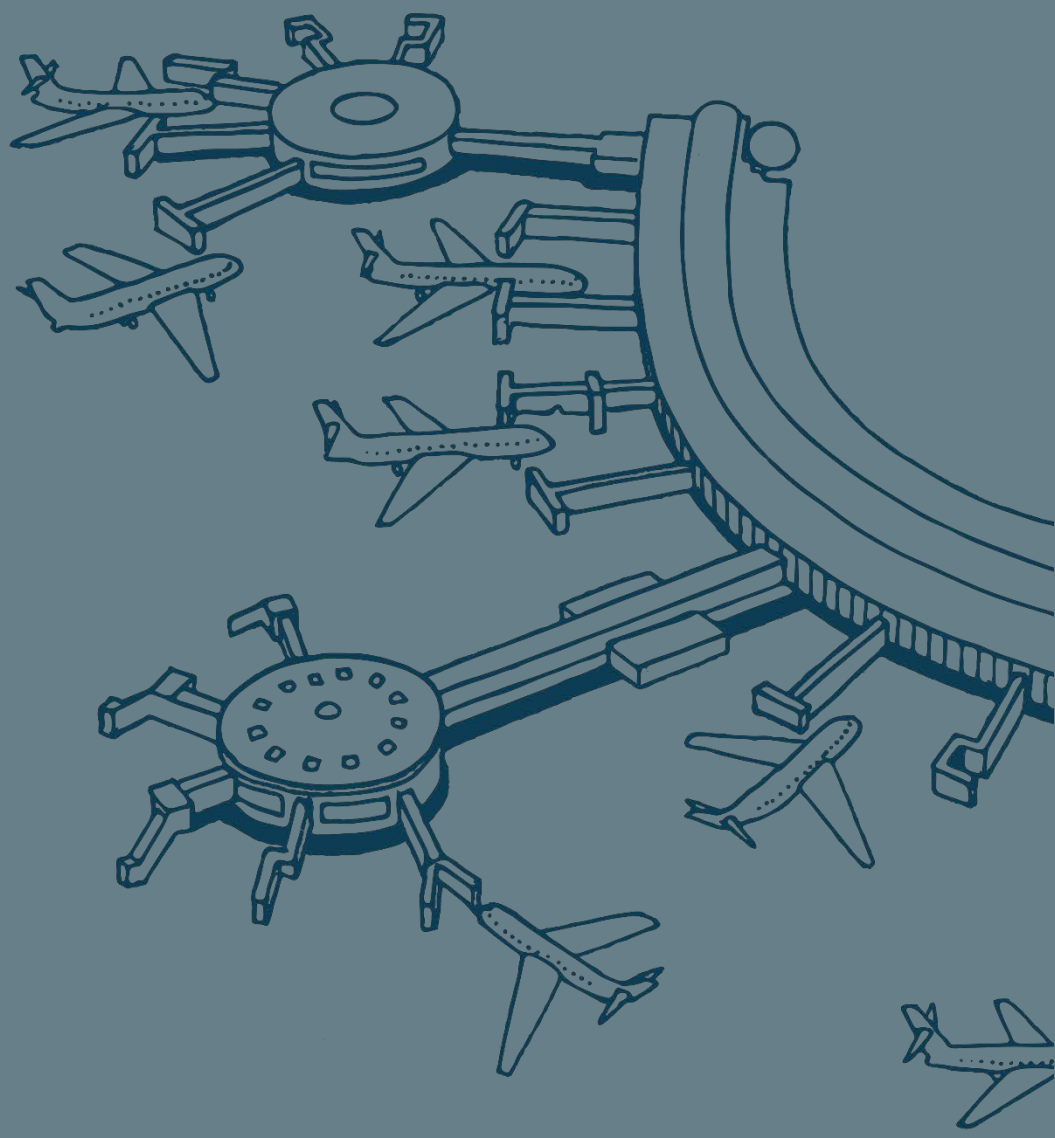
1.4 Project Proponent

All works associated with the proposed development are on land within the existing boundary of the Brisbane Airport. Brisbane Airport Corporation (BAC) is an “airport-lessee-company” under the Airports Act. The proponent for this proposed MDP as defined under the Act is:

Brisbane Airport Corporation Limited

11 The Circuit, Brisbane Airport Qld 4008

The contact in connection with this Project is Paul Lutz, Infrastructure Planner, telephone (07) 3406 3156.



2

PROJECT DESCRIPTION

2. Project Description

2.1 Project Summary

The Project involves the construction of the BNE Auto Mall on an unused 51.3 ha parcel of land bordered by Moreton Drive, Airport Drive and Nancy Bird Way. The Project will include an automotive performance track, associated manoeuvring and handling courses, skidpan and 4WD testing circuit, automotive dealerships, brand experience centres and a track operations and management centre.

The intention of the BNE Auto Mall is to operate day and night, seven (7) days a week, offering a variety of experiences and opportunities for both the visiting public as well as the on-site tenants and workers. The performance track is envisaged to host regular (>75 times a year), semi-regular (between 25 and 75 times a year) and annual events such as:

- Corporate driving events;
- Shared test drive days;
- Motorbike test days;
- Driving experience days;
- Driver training days;
- 4WD training days; and
- Special and major event days.

The automotive dealerships are anticipated to be located around the perimeter of the performance track to create a new landmark destination, with brand experiences centres showcasing leading automotive brands and promoting a combination of retail, commercial, service and cultural activities to generate significant economic and social activity. The brand experience centres will be centrally located in the BNE Auto Mall to accommodate a diverse range of events and allow flexible capacity.

2.2 Project Justification

The *Brisbane Airport Master Plan 2014* (Master Plan) defines the vision for Brisbane Airport "*to be world class – a distinctive place that visitors keep coming back to, and to be the best possible partner for airlines and businesses*", *by*:

- Promoting and evolving Brisbane Airport's role as a major economic engine for Australia;
- Developing Brisbane Airport as a premier gateway airport and a multi-modal transport hub;
- Creating a prosperous airport business community within a sustainable environment; and
- Achieving growth and development by balancing economic benefits and environmental impacts.

The vision is delivered through Brisbane Airport's Land Use Plan which aims to increase Brisbane Airport's contribution to the regional economy and respond to market demand with opportunities identified to provide for a mix of business, retail, industrial and tourism activities.

The Project will enable the development of a currently unused parcel of airport land to create an affluent business community, promote growth and development activity and contribute as a major economic engine for South-East Queensland.

The 51.3 ha site is an optimal location for the BNE Auto Mall as motorsport complexes require a substantial amount of vacant land in commercial and/or industrial areas, located away from residential suburbs. As such, there is limited land suitable to accommodate a motorsport complex in Brisbane which is easily accessible from the CBD. Further, there are numerous examples of car dealerships and performance tracks co-existing with airports within Australian and internationally such as:

- Essendon Fields Car Dealerships – located immediately adjacent to Essendon Fields Airport, Melbourne;
- Mick Doohan Raceway (motorbikes) – near to Brisbane Airport;
- Archerfield Speedway – located immediately adjacent to Archerfield Airport, Brisbane;
- Fairbairn Park Motorplex – immediately adjacent to Canberra Airport;
- Geelong Motorsports Complex – located immediately adjacent to Avalon Airport;
- Sepang International Circuit (Malaysia) – located immediately adjacent to Kuala Lumpur Airport;
- Donnington Park (England) – located immediately adjacent to East Midlands Airport; and
- New Jersey Motorsports Park (US) – located immediately adjacent to Millville Executive Airport.

2.3 Location of Proposed Development

The Project is situated on an unused 51.3 ha parcel of land bordered by Moreton Drive (west), Airport Drive (east) and Nancy Bird Way (north), formally described as Lot 10 on SP238997 (Project site).

Land uses in close proximity to the Project site include Kingsford Smith Memorial (95 m east), the Brisbane Service Centre to the north-east and Secure Parking for the International Terminal and Multi-level Car Park to the south-east. Distance to nearby residential suburbs is over 2 km and is illustrated in Figure 1.

The Project site is illustrated in Figure 2.

2.4 Proposed Land Uses

The Project will provide for a range of land uses over nominally 27 lots, with each lot located around the centralised performance track (refer Figure 2). Future land uses will facilitate a high quality commercial environment with a density and form of development that generates vibrant activities. The Project will be designed to co-exist within the Brisbane Airport, activate the public realm and provide opportunities for visitors, tourists and businesses to thrive.

A summary of the land uses with the corresponding lot/s is further discussed in Sections 2.4.1 to 2.4.5. It should be noted that final development plans for land uses within the BNE Auto Mall are yet to be determined and may result in some lots being amalgamated. Nevertheless, the following descriptions provide an indication of the likely nature and scale of the Project. These descriptions have been used to assess the potential operational and environmental impacts.

It is noted that the Project includes vacant lots to cater for future development opportunities within the Project site. Where triggered, future developments may be subject to a further MDP within the BNE Auto Mall.

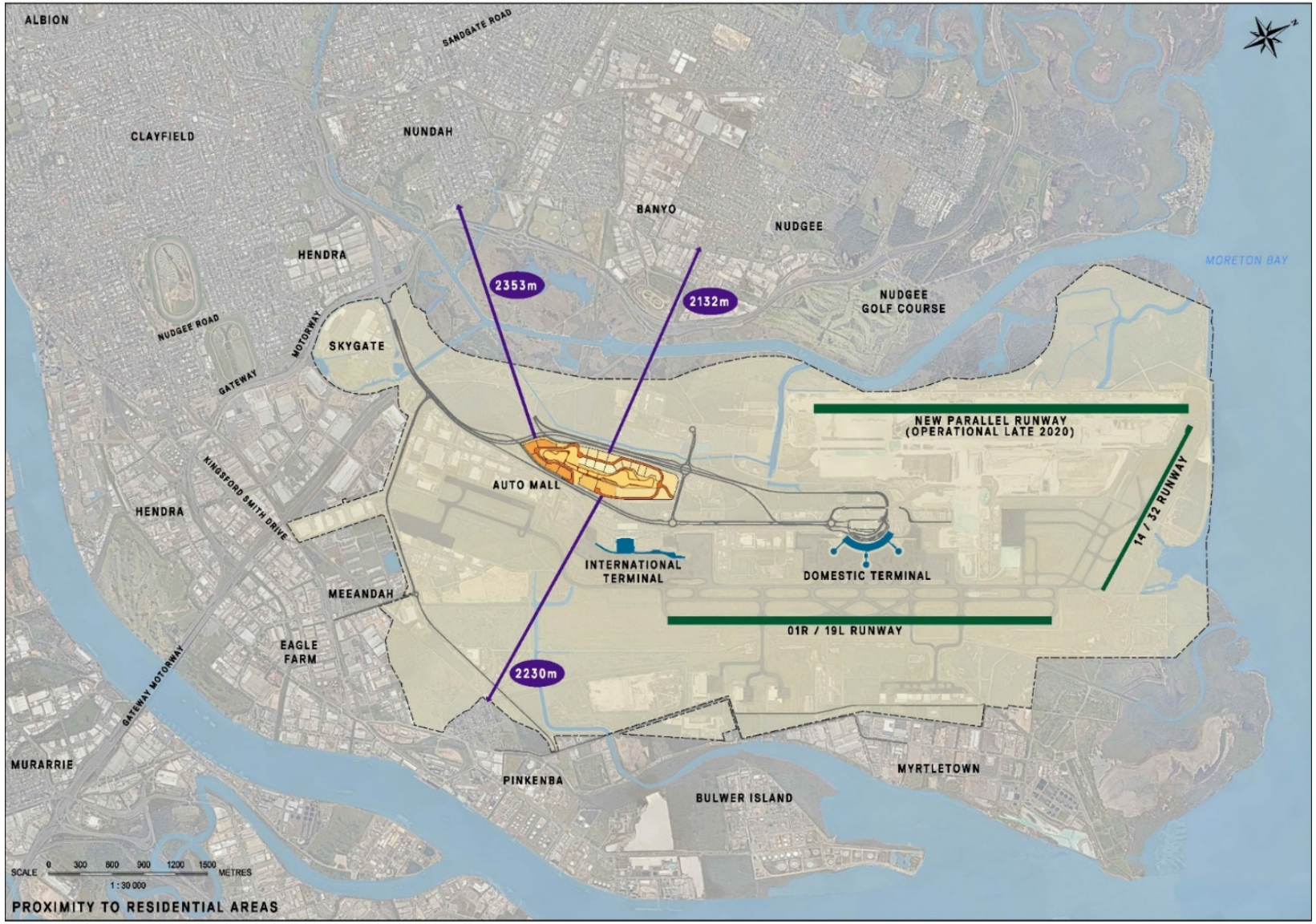


Figure 1 **Proximity of Auto Mall to residential areas**

Figure 2 **BNE Auto Mall indicative building locations**

2.4.1 Performance track

The performance track will be a key feature of the BNE Auto Mall and will promote a range of active sport and outdoor recreational pursuits. The performance track will include a 2.5 km performance track, skid pan, kick plate, manoeuvring course, dedicated slalom area, 4WD demo course, low friction handling circuit and associated driver trainer facilities.

The Track Operator will manage the day to day operations and services associated with the performance track. This includes but is not limited to managing all on-track experiences and events, coordinating support services such as safety, marshalling and medical support, and managing track activity calendars and bookings.

The performance track will be designed to target certification under the Confederation of Australian Motor Sports (CAMS), the official governing body of motorsport in Australia. A CAMS certification ensures the performance track has been designed in accordance with the highest standards of safety, such as through the consistency of curve trajectory, design of deceleration zones, development of impact-absorbing trackside protection and suitability of signalling to CAMS standards. Verification of the safety level of the performance track will be performed by a qualified inspector, prior to achieving certification. The performance track will operate to a national and international standard and promote safety, fairness and social responsibility in the conduct of motorsport (CAMS 2019).

Vehicles utilising the performance track will include:

- Standard road vehicles;
- High performance vehicles;
- Four wheel drive vehicles;
- Motor bikes; and
- Racing cars on special or major event days only.

With the exception of racing cars and certain resident track vehicles, all vehicles will be registered.

The definition of ‘high performance vehicles’ can be defined as:

- A registered vehicle that complies with Australian Design Rules (ADR) (eg for safety, noise, emission control etc);
- A vehicle which contains a higher capacity engine (with higher power output) than standard road vehicles and may generally have a louder exhaust system (although must still comply with ADR requirements, such as ADR 28/01 – External Noise of Motor Vehicles).

The point of difference between high performance vehicles and racing cars is that racing cars do not require vehicle registration and are therefore not subject to the ADRs. However, racing cars will be required to comply with the CAMS Manual of Motor Sports. These CAMS requirements include various safety measures and a maximum noise emission limit of 95dB(A) when measured 30m from the track edge.

The performance track can operate seven days a week. The proposed usage of the performance track is provided in Table 2 which includes estimated frequency, operating hours and estimated number of people to attend each of the events. While it is anticipated that the events will be held on singular days, the special and major events may run over the course of up to three days (ie Friday, Saturday and Sunday).

Table 2 Proposed usage of performance track

Track Use	Estimated Frequency (Events per year)	Estimated duration	Estimated people (per event)
Corporate driving events The Corporate Driving Events will allow priority tenants to host events for their guests with exclusive use of the performance track. The Corporate Driving Events will be closed to the public and operate on a strict 'invitation only' basis.	50	9am – 6pm	80
Shared test drive days The drive days provide an opportunity for the public to test drive a range of vehicles on the performance track, skid pan and/or 4WD area.	150	9am-10pm	60
Motorbike test days Motorbike test days will provide an opportunity for the public to test drive a range of motorbikes on the performance track.	25	9am – 10pm	60
Driver experience days The Track Operator will facilitate a range of driving experiences at the performance track, which will be open to the public, including exotic drive experiences, (e.g. sports cars) where guests will be able to drive laps in the car of their choice. An example of the types of driving experiences that could be offered include: • *Precision training* which focuses on the fundamentals of vehicle control for first time participants • *Precision plus* which teaches driving dynamics and how to correctly respond to critical scenarios with an instructor • *Performance training* that develops knowledge of vehicle control at higher speeds using the correct racing lines with an instructor • *Master training* that provides one-on-one training to optimise skills required for motor racing • *Expert training* which focuses on providing the highest level of performance with a race car, including one-on-one coaching, race data analysis and race engineering debriefing	100	9am – 10pm	48
Driver training days The Driver Training Days will be operated by an accredited driving academy to cater to all levels from L-	30	9am – 6pm	30

Track Use	Estimated Frequency (Events per year)	Estimated duration	Estimated people (per event)
Platers to P-Platers, corporate and fleet as well as race car tuition onsite.			
4WD training days 4WD days will provide an opportunity for the public to test drive a range of 4WDs on a test course to demonstrate features of 4WD vehicles	75	9am – 6pm	30
Special and major event days The Special and Major Event Days may include classic car events, single automotive brand model launches, industry-wide events for new vehicles, as well as showcasing other vehicles and products.	2	9am – 10pm	1,000 (Special events) 5,000 (Major events)

2.4.2 Dealerships

The dealerships will generally contain a showroom, reception area, visitor centre, vehicle servicing, administration area and may also provide dining and entertainment areas. Where applicable, BAC will require tenants to provide end-of-trip facilities in accordance with *Queensland Development Code (QDC) Mandatory Part 4.1 - Sustainable Buildings.* While the peak times of use is expected to be on the weekends, the dealerships will have a level of economic and social activity to serve visitors and workers seven days a week with opening hours generally from 9am to 10pm.

The key strategy to delivering a point of difference at the BNE Auto Mall, setting it apart from more typical automotive dealerships, is to create a distinctive shop frontage and carefully manage the visual dominance of vehicles from the street. Preliminary research has identified 17 automotive brands that are considered potential dealership tenants. These tenants comprise a mix of standard and luxury brands:

- Toyota
- Mazda
- Holden
- Hyundai
- Ford
- Nissan
- Volkswagen
- Subaru
- Mercedes-Benz
- BMW
- Audi
- Land Rover
- Lexus
- Volvo
- Porsche
- Peugeot
- Mini

The dealerships will be sited adjacent to the performance track to provide opportunities for activated roof spaces and customer viewing terraces.

2.4.3 Brand experience centres and Operations Centre

The brand experience centres are to be located on Lots 7 to 9. Lot 10 will accommodate the Operations Centre.

The brand experience centres are expected to provide access to the performance track, a car showroom, workshop and lobby, as well as function rooms, lounge areas, office space and meeting rooms. The brand experience centres will be designed to provide state of the art facilities for manufacturers to introduce customers to new vehicle models and technology, while maintaining connection with the performance track in the design. The brand experience centres are adjacent to the performance track and will seek opportunities to activate the roof space and create customer viewing terraces and function rooms.

Where applicable, BAC will require tenants to provide end-of-trip facilities in accordance with *Queensland Development Code (QDC) Mandatory Part 4.1 - Sustainable Buildings.* Open seven days a week, the brand experience centres will generally operate from 9am to 10pm.

2.4.4 Vacant lots

Lots 21 to 27 are proposed as vacant lots and will not be developed as part of this MDP. The vacant lots will be grassed or stabilised, and appropriately vegetated stormwater swales will be installed. On-going monitoring of the ground condition for the vacant lots will be undertaken to ensure there are no adverse impacts on the amenity of the BNE Auto Mall. Where future development requires an MDP under the provisions of Section 91 of the Airports Act, a separate MDP will be submitted for assessment.

2.4.5 Special and major events

The BNE Auto Mall may hold special and major event days at an estimated frequency of two per year (i.e. bi-annual). These events may include classic car events, single automotive brand model launches, industry-wide events for new vehicles, as well as showcasing other vehicles and products.

It is noted that special events may attract more visitors than typical day-to-day operations. As such, an Event Management Plan will be established prior to any events to ensure the civil infrastructure will be appropriate to support larger crowds. The Event Management Plan will include a venue management plan, pedestrian management plan and risk management plan. A template of the Event Management Plan is provided in Appendix B. While it is anticipated that the special and major events will be held on singular days, there may be occasions where the events are run over the course of up to three days (ie Friday, Saturday and Sunday). If a special or major event is planned to run more than one day, potential impacts on sensitive receptors will be considered and managed through a specific Event Management Plan.

2.5 Design considerations

While no design has been prepared for inclusion in this MDP, all design within the BNE Auto will be undertaken in accordance with the *BNE Auto Mall Development Plan* (refer Appendix C).

2.5.1 Built form and construction materials

The built form of the BNE Auto Mall will be controlled by Building Design Guidelines within the *BNE Auto Mall Development Plan* (refer Appendix C). The Building Design Guidelines aim to provide a basis for a consistent and high-quality built form which will be achieved through flexible and varied use of colours, designs, roofing heights, building materials, façade treatments and recesses, overhangs and shading.

The construction material for the buildings will primarily consist of aluminium composite panel to external facades.

The front of house for the dealerships and brand experience centres will present large volume showroom spaces with primarily glazed facades facing the internal street edge. The showroom spaces will include high ceilings to address the street with brand entry statements to create the point of address and entry to the showrooms. A consistent and simple palette of materials will be used to convey a strong sense of unity and cohesion throughout the BNE Auto Mall. The architecture will exploit the opportunity for interesting facades presented by the simple, low scale, large volume footprints.

The roof sheeting of the buildings will be Colorbond (or similar).

While the buildings' primary frontage will be on internal precinct roads, some lots will address the performance track and a small number will address the external road network. Due to the high visibility from multiple angles, the buildings will present a high-quality design and finish on all facades. The proposed orientation and positioning of buildings will be aimed to create an active and dynamic streetscape, using building scale and bold landscaping to define distinctive street addresses for businesses.

Front setback areas will incorporate landscaping to establish an attractive and well-defined address to the property and be free of structures such as rainwater tanks and outbuildings. Further, the built form will be responsive to the subtropical climate of the region and seek opportunities to incorporate shading devices and articulation of elevations and entrances.

The design of buildings will ensure that all plant decks, air conditioning systems, booster assemblies, substations, refuse areas and all back of house services are screened from view. In addition, tenancies will be required to adopt strategies to reduce visual impact of any substations and minimise the potential negative impact on amenity and business addresses. Generally, substations will be housed within the buildings. Alternatively, where substations are proposed external to the building, they must be screened or treated. Screening may be achieved through landscape planting or painting of the substation exterior to match with corporate colours and finishes used on the lot.

Further details in relation to the proposed built form is provided in Table 3.

Table 3 Proposed built form

Indicative Lot	Indicative Lot Area (m^2)	Maximum Height (storeys)	Maximum Height (m)	Description
Stage 1A				
1A	24,000	3	12	Dealership
2	12,000	3	12	Dealership
3	7,000	3	12	Dealership
4	6,000	3	12	Dealership
5	5,000	3	12	Dealership
6	6,000	3	12	Dealership
7	6,000	3	12	Brand Experience Centre
7A	5,000	3	12	Brand Experience Centre
8	5,000	3	12	Brand Experience Centre
9	5,000	3	12	Brand Experience Centre
10	5,500	3	12	Operations Centre
11	5,000	3	12	Dealership
12	8,000	3	12	Dealership
13	8,000	3	12	Dealership
14	7,000	3	12	Dealership
15	11,000	3	12	Dealership

Indicative Lot	Indicative Lot Area (m^2)	Maximum Height (storeys)	Maximum Height (m)	Description
Stage 3				
16	8,000	3	12	Dealership
17	6,000	3	12	Dealership
18	6,000	3	12	Dealership
19	6,000	3	12	Dealership
20	7,000	3	12	Dealership

2.5.2 Landscaping

Landscaping within the BNE Auto Mall will meet Brisbane Airport's key priority to protect and manage natural resources. The high quality of the landscaping and public realm environment will add to the visual amenity and ambience of the BNE Auto Mall and be complementary to the creation of a 'Sense of Place' in the Airport Central (Airport Drive West) precinct.

All planting will be in accordance with the BAC's Landscape Setting Strategy (LSS) as the primary reference for all landscape initiatives at Brisbane Airport. Irrigation opportunities will be explored as part of detailed design. Street trees will be located immediately adjacent to concrete footpaths to support Brisbane's subtropical climate with large verges and deep planting areas.

Vegetated Stormwater Management Swales will be required at intervals between developments for site drainage. Swales will be provided at boundaries perpendicular to the internal road network where hydraulic capacity requires.

It is anticipated that the dealerships will establish landscape frontages to define the internal streets. Due to the scale of the proposed architecture, landscape treatments are proposed to be bold to complement the scale of the BNE Auto Mall precinct.

A consistent and simple palette of material will be used to convey a strong sense of unity and cohesion throughout the development for each lot with planting design and species choice to maximise shade and tree cover. High quality materials will be used to ensure minimal and appropriate maintenance requirements and avoid material failures.

2.5.3 Occupational Health and Safety

Occupational health and safety requirements within and adjacent to the Project site will be in accordance with relevant BAC, Commonwealth Federal Government Agency Requirements and all applicable statutory requirements including the *Work Health and Safety Act 2011* (Cth), *Work Health and Safety Act 2011* (Qld), *Work Health and Safety Regulation 2011* (Qld) and the National and State Codes of Practice.

2.5.4 Equity of Access

All proposed buildings will be designed and constructed to meet the requirements of the *Disability Discrimination Act 1992*. Provisions for mobility-impaired people within the building will comply with the applicable codes, including the Disability (Access to Premises – Buildings) Standards of the Building Code of Australia (BCA).

2.5.5 Energy Efficiency Considerations

All buildings will be designed having have regard to the mandatory performance requirements deemed to satisfy provisions of the BCA. During the design process, BAC and future tenants will investigate means of adopting energy efficiency techniques in the building design.

2.5.6 Fire Protection and Safety

The proposal will ensure buildings will be designed to meet minimum fire flow standard and incorporate fire protection systems to be compliant with the latest Australian Standards and regulations, relative to the class of building constructed.

2.5.7 Security

Developments within the BNE Auto Mall will provide a safe and secure environment for visitors, customers and employees. The detailed security measures will be confirmed during the detailed design phase; however, are likely to be consistent with the principles for car parks contained in the *Crime Prevention Through Environmental Design: Guidelines for Queensland* (Queensland Government, 2007).

For security or site delineation, bollards may be used. It is noted bolt down bollards are not permitted unless prior approval has been provided by BAC.

2.6 Civil Infrastructure

The Project will provide appropriate civil infrastructure to support the anticipated number of employees and visitors at the precinct. The following section provides a detailed description of the supported infrastructure that will form part of the Project.

2.6.1 Internal Roads

The internal road network planned for the BNE Auto Mall will connect to the external road network via Nancy Bird Way and Airport Drive. The typical internal road reserve width will be 20 m, with the indicative internal road reserve configuration shown in Figure 3.

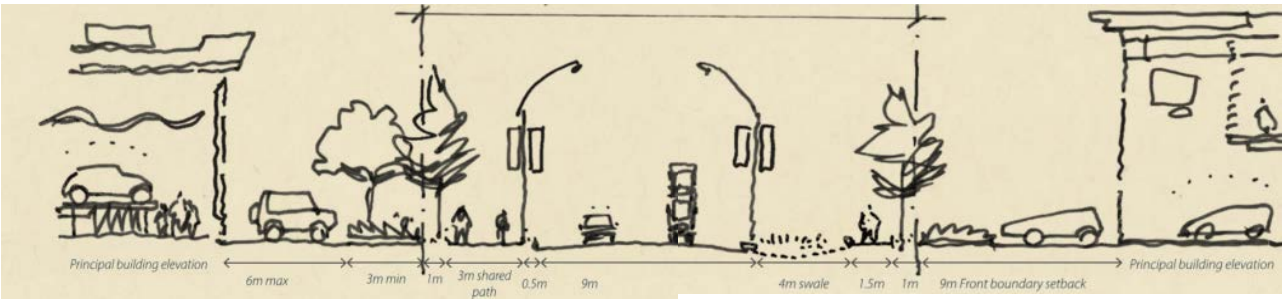


Figure 3 Typical internal road reserve configuration

The internal road network will accommodate two-way traffic, service corridors and landscaping to define a strong street address. Figure 4 illustrates a typical cross-intersection of the internal road network.

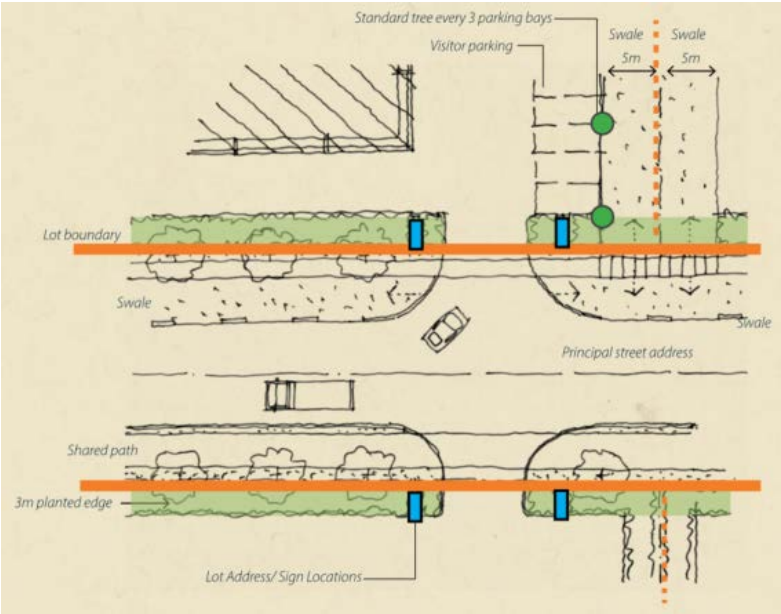


Figure 4 Aerial typical cross-intersection to define a strong street address

2.6.2 Parking

Parking areas are to be provided within the tenancies of the BNE Auto Mall and will be designed to create a comfortable space for staff, visitors and customers. On-street parking will not be accommodated for on the internal road network.

To ensure that the requirement for formal car parking does not drive the design outcome, an approach has been adopted that relates car parking provision to the overall lot area that will accommodate automotive dealerships and the brand experience centres. From observation of auto showrooms within the wider Brisbane are, traditional car showrooms occupy approximately 20% of the overall lot area – the lot area is approximately 5 times the gross floor area (GFA).

Brisbane City Council's (BCC) Planning Scheme 6.31 Part 6 Car parking space standards (2014) has been used as a baseline guide to determine the number of parking spaces required for the Auto Mall development. The Council rates used for reference are 3 spaces per 100 m^2 for GFA. Using the conversion of lot area generally being 5 times the GFA for auto showrooms, the equivalent number of car parking spaces would be 0.6 spaces per 100 m^2 lot area.

However, given there is no on-street parking available at the BNE Auto Mall, a conservative minimum rate of 0.75 car parking spaces per 100 m^2 of lot area is recommended for each lot. The spaces subject to this ratio will accommodate parking for visitors and staff only. Spaces used for operations (i.e. display areas, servicing, repairing, detailing, reconditioning etc.), will be considered separately, but will not encroach on or compromise the spaces that have been dedicated for visitors and staff.

The car parking rates apply to the provision of spaces for visitors and employees only, areas for the storage and showing of vehicles are related to the design and layout of the dealerships and not subject to development requirements.

The level of parking derived from the rates indicates the level of car parking required for the BNE Auto Mall to function. Additionally, the opportunity exists to offset 'within precinct' parking by using space at other tenancies and connecting to the BNE Auto Mall via other modes (pedestrian pathways).

Parking for each tenancy will be positioned at the front of the site, and/or along the side boundary. The parking areas will provide consistent landscaped areas throughout the permeable surface area to convey a strong sense of unity throughout the development. One passively irrigated shade tree will be provided every three parking spaces.

Parking spaces for persons with a disability (PWD) will be provided at a rate of one space per 50 standard parking spaces, with a minimum of one space a requirement. PWD parking spaces will be provided as close as practical to the main entrance of the buildings.

While on-site parking will be provided within the BNE Auto Mall, there are large parking facilities in close proximity to the Project site that will be able to accommodate for overflow parking such as Central Parking Area (CPA), Banksia Place Precinct and the International Terminal Building. Additionally, parking will also be provided at other temporary locations within the Project site (i.e. vacant lots), as illustrated in Figure 13. These temporary locations will be used infrequently to assist with managing parking demand for events. However, should the vacant lots require additional use, mitigation measures such as a chip seal or an equivalent temporary cover to address potential environmental issues (eg air quality and erosion and sediment issues) can be implemented. Further, on-going monitoring of the ground condition for the vacant lots will be undertaken to ensure there are no adverse impacts on the amenity of the BNE Auto Mall.

2.6.3 Pedestrian Network

The BNE Auto Mall will provide a pedestrian network the promotes equitable, efficient and safe movement of persons, including persons with a disability, and contributes to pedestrian friendly streets and accessible places where people can meet. The typical internal road reserve configuration will consist of a 1.5 m pedestrian pathway on one side and a 3 m shared pathway on the opposite side, as illustrated in Figure 3. The pathways that will be clearly separated from parking and vehicle manoeuvring areas to provide safe pedestrian movement through the development that connects with the external pathways.

The pedestrian pathways will provide direct access to buildings and will not be obstructed by solid walls, fencing or landscaping.

2.6.4 Public and Active Transport

While the most prominent mode of transport to access the BNE Auto Mall is predicted to be private vehicles, the Project will incorporate design features to promote public and active transport to and from the site. Figure 13 illustrates the existing and proposed public and active transport network for the BNE Auto Mall. The BNE Auto Mall will improve connectivity to the external public and active transport network via the implementation of high quality non-car based travel infrastructure.

The nearest public transport stop available is the Airtrain Station at the Brisbane International Terminal, located approximately 500 m from the BNE Auto Mall. The service operates every 15 minutes in peak hours and every 30 minutes during the off peak. There is currently a bikeway route and pedestrian pathway that connects the Project site and the Airtrain Station.

Currently, there are no public bus services that serve the Project site, however, the closest bus is route 590, which serves the Skygate precinct. An internal bus service to the BNE Auto Mall can be provided by BAC, which involves re-configuration of existing BAC service routes (or new route/s) between Brisbane Airport Terminals (International and Domestic), surrounding tenancies and the BNE Auto Mall. The nearest bus stops to the Project site are located at the Brisbane International Terminal, 200 m north-east between Banksia Place and Nancy Bird Way and the Central Parking Area. There are bikeway routes and pedestrian pathways that connect the existing bus stops and the Project site.

Active transport provision within Brisbane Airport includes shared bicycle and pedestrian pathways. Currently, a high standard of off-road active transport access is provided to the Skygate precinct from the Kedron Brook Bikeway. In addition, there are cycle lanes and paved shoulders along Qantas Drive and Airport Drive (east of the International Terminal) and across to Nancy Bird Way, which provide for active transport access to the Project site. There is also an opportunity for the BNE Auto Mall to provide a future connection with these existing active transport options, delivering a continuous off-road shared path from the Kedron Brook Bikeway to the Brisbane International Terminal, via both Skygate and the BNE Auto Mall.

It is important to note that given the Project site is located 2 km from the nearest residential areas, pedestrian access will predominantly be to and from the Airtrain Station and surrounding bus stops.

2.6.5 Servicing

The Project will be serviced on-street by an Articulated Vehicle (AV), as per the provisions of the *Transport, Access, Parking and Servicing* (TAPS) *Planning Scheme Policy* (PSP). The internal roads and intersections will be designed to accommodate a heavy rigid vehicle (HRV) and an internal road width to accommodate loading bays on road that still provide adequate room for passing vehicles at designated areas. There will be time of day restrictions in place for service vehicle access to ensure no servicing occurs during weekday peak hours (5am to 10am and 3pm to 6pm) and weekend peak hours (depending on hours of performance track operations).

2.7 Project Development Stages

The Project will be developed in stages to appropriately manage development activity. The indicative timing of the Project may be influenced by commercial demand, which may warrant works to be brought forward or pushed back. However, all works will be managed to minimise construction impacts on the operations of the dealerships that form part of the initial stages.

The BNE Auto Mall is scheduled to officially open late 2021 following the completion of the performance track, and completion of the roads and services and certain buildings that form part of Stage 1 (Stage 1 is divided into 1a – lots, and 1b - performance track). The stages for the Project are illustrated in Figure 5 and a description of the works involved in each stage and the timing is provided in Table 4.

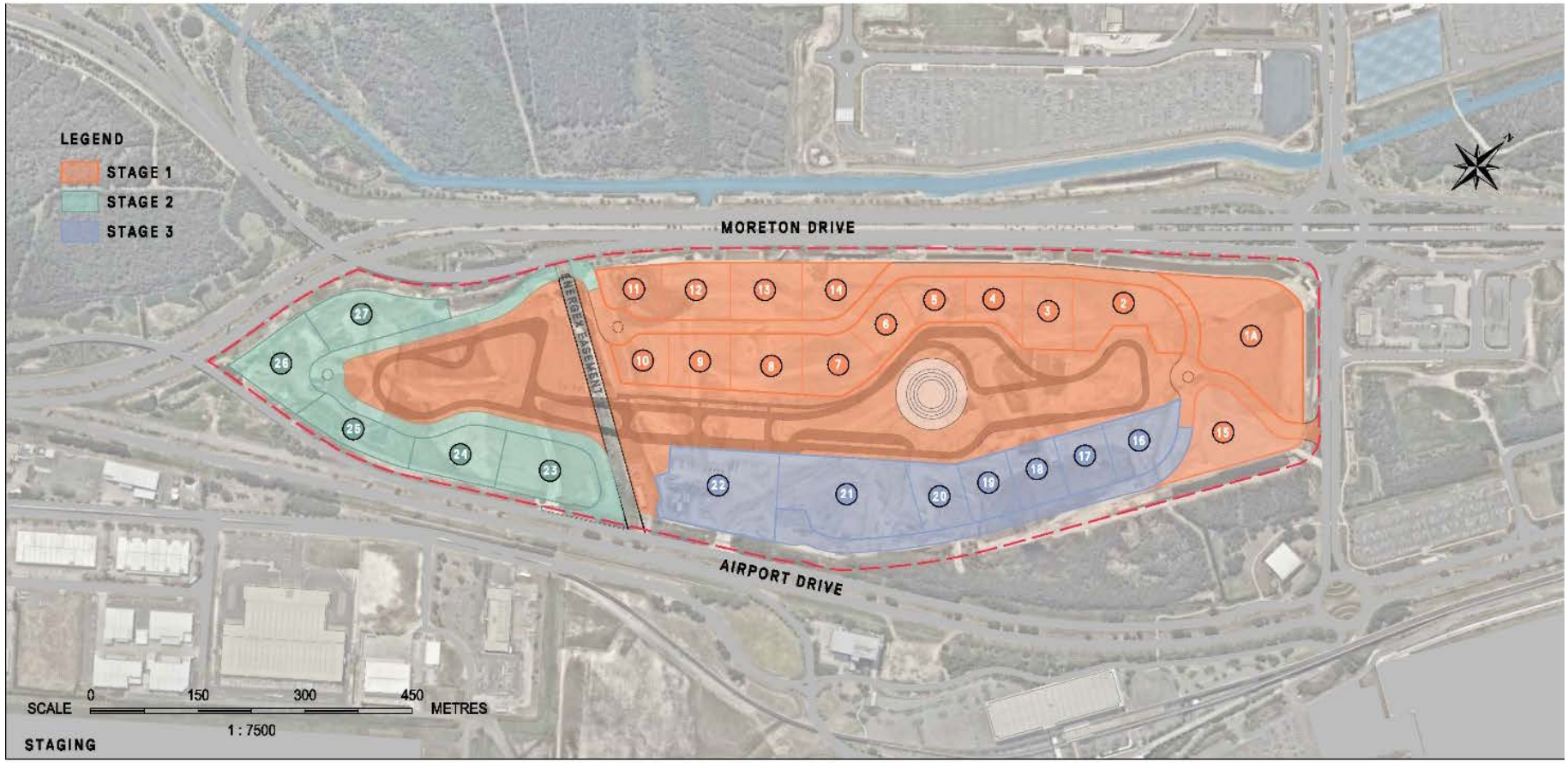


Figure 5 BNE Auto Mall Staging Plan

Table 4 Anticipated Project stages

Stage	Description	Estimated timing
Site preparatory works	Endorsed under the EAR and discussed further in Section 2.8.	Underway Completion: late 2020
Stage 1a	Development of Lots 1 to 15 (initial dealerships and brand experience centres). Stage 1a will also include associated internal roads and services required for the Lots to operate. A permanent connection to the external road network off Nancy Bird Way will also be constructed.	Start: Early 2020 Completion: • Roads & services: late 2020 • Buildings: 2021/ 2022
Stage 1b	Performance track (including skid pan, kick plate, 4WD track etc) and track operation centre, including associated services required for the performance track to operate.	Start: Q2 2020 Completion: Mid-2021
Stage 2	Development of Lots 23 to 27 as grassed or stabilised and fully serviced with appropriate infrastructure (stormwater etc) to allow for potential future development.	Start: Q2 2020 Completion: • Roads & services: Q2 2021
Stage 3	Development of Lots 16 to 20 (additional dealerships), including associated internal roads and services required for the Lots to operate. Roads and services for Stage 2 will connect with Stages 1a and 1b and provide a second permanent connection to the external road network off Airport Drive. Lots 21 and 22 will be developed during Stage 3 as grassed or stabilized and fully serviced with appropriate infrastructure (stormwater etc) to allow for potential future development.	Start: Late 2020 Completion: • Roads & services: Q4 2021 • Dealership buildings: 2023

2.8 Consistency with the Environmental Assessment Report

BAC prepared and submitted an Environmental Assessment Report (EAR), which was endorsed by the Department of Infrastructure and Regional Development to identify potential environmental issues and impacts associated with Phase 1 of the BNE Auto Mall, i.e. the site preparatory works (refer Appendix D for a copy of the EAR). Phase 2 of the BNE Auto Mall relates to the construction and operation of the development (subject to this MDP).

A description of the works associated with Phase 1 and Phase 2 is provided in Table 5.

Table 5 Description of works

Phase	Description of works
1. Site preparatory works (endorsed under the EAR) and due for completion in 2020	• Site clearing and partial grubbing • Bulk earthworks, including the importation of fill, sorting, crushing and stockpiling • Surcharging for roads, performance track and building areas

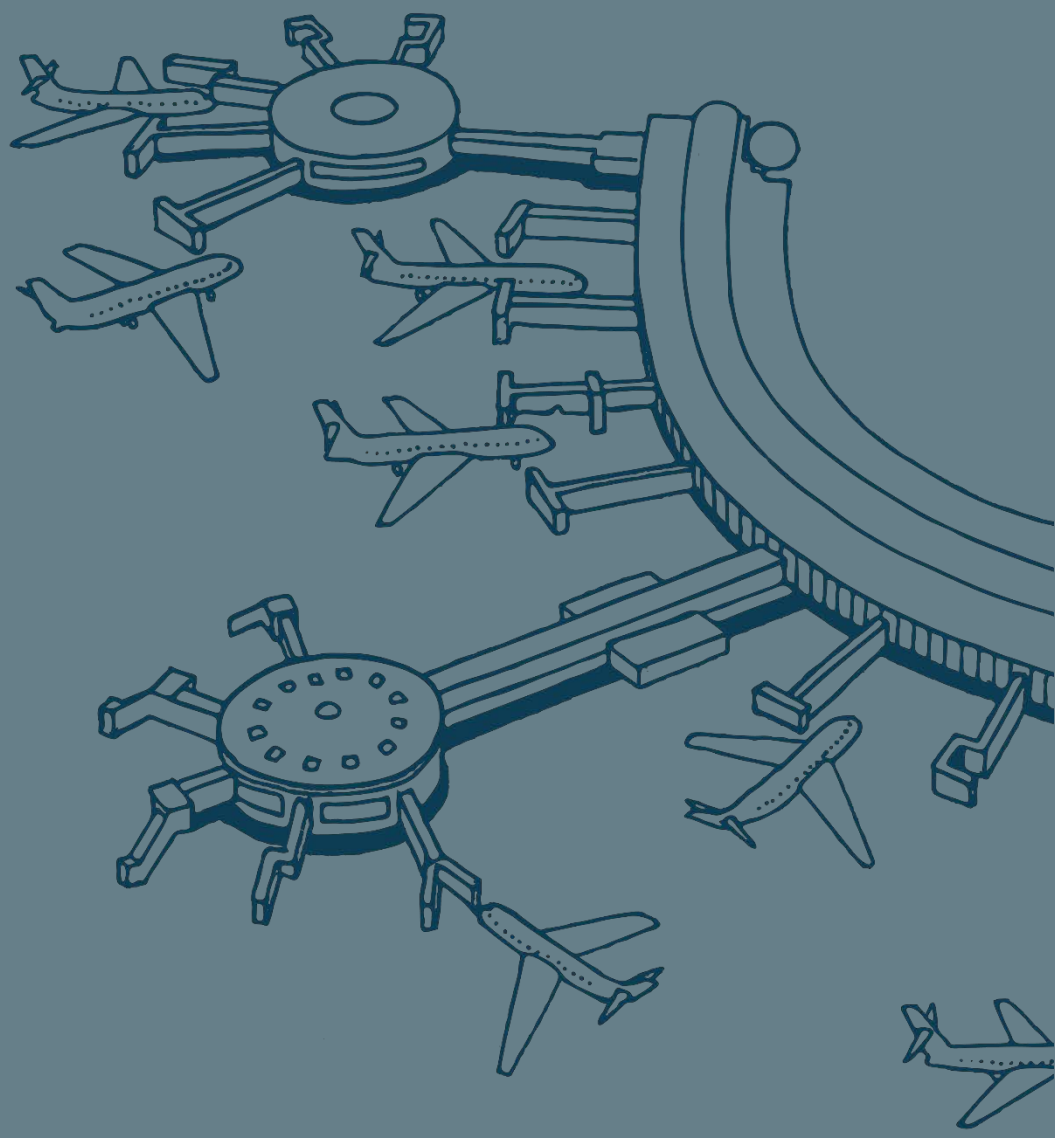
Phase	Description of works
	• Drainage works (e.g. development of perimeter the drain) • Acid sulfate soil treatment as per the Acid Sulfate Soil Management Plan; and • Ongoing monitoring of groundwater and surface waters (including PFAS), and regular dust, noise and vibration monitoring.
2. Construction and operation of the BNE Auto Mall (subject of this MDP)	• Performance track, skid pan, 4WD testing circuit and associated manoeuvring areas • Dealerships and brand experience centres • Fully serviced and landscaped roadways providing access and connections to Airport Drive and Nancy Bird Way • Associated services and infrastructure; and • Ongoing monitoring during construction and operation, which will include groundwater and surface waters (including PFAS), and acid sulfate soil management.

These preparatory works commenced in September 2017 and involve a rolling program of the three stages. Stages 1 and 2 involved filled and surcharged from imported fill while Stage 3 involves the re-use the surcharge material from Stage 1. Generally, consolidation times are approximately 12 months, although some areas of Stage 3 will require over 12 months of consolidation.

These preparatory works are being conducted under a CEMP to ensure the implementation of mitigation measures to minimise identified impacts. The current condition of the site (as at 26 October 2019) is illustrated below in Figure 6.

Figure 6 Site condition as of 26 October 2019 (aerial source: NearMap)

The site has been cleared and upon completion of these preparatory works, the improved site will be filled to suitable levels and will coincide with the commencement of construction for the BNE Auto Mall infrastructure outlined in Section 2.6. As such, this MDP considers baseline conditions to be a cleared and filled site that has been raised to 3.4 – 4.2 m Aerodrome Datum (AD), (2.27m – 3.07m Australian Height Datum (AHD)) with a drainage channel installed around the perimeter of the site and appropriate erosion and sediment controls in place.



3

LEGISLATIVE CONTEXT

3. Legislative Context

The Project is located on Commonwealth owned land at Brisbane Airport and governed by Commonwealth legislation, primarily the Airports Act and the Airports (Environment Protection) Regulations 1997 (AEPR). Development on airport land is to be assessed in accordance with the relevant Commonwealth legislation. However, if Commonwealth legislation is silent about an aspect of the development, BAC representatives and/or the Airport Environment Officer (AEO) may choose to observe the requirements of relevant State legislation.

The following sections provide an overview of relevant legislation and policy for the BNE Auto Mall. As BAC holds a long-term lease over the Brisbane Airport from the Commonwealth Government all building and development activities are regulated by Commonwealth legislation consisting of, but not limited to:

- *Airports Act 1996 (Cth);*
- *Airports Regulations 1997 (Cth);*
- *Airports (Building Control) Regulations 1996 (Cth);*
- *Airports (Environment Protection) Regulations 1997 (Cth);*
- *Airports (Control of On-Airport Activities) Regulations 1997 (Cth);*
- *Airport (Protection of Airspace) Regulations 1996 (Cth);*
- *Environment Protection and Biodiversity Conservation Act 1999 (Cth);*
- *Workplace Health and Safety Act 2011 (Qld);*
- *Aviation Transport Security Act 2004 and regulations (Cth);* and
- *Civil Aviation Safety Authority Manual of Standards – Part 139 Aerodromes (Cth).*

3.1 Consistency with Commonwealth Legislation

3.1.1 Airports Act 1996

3.1.1.1 Background

The Airports Act regulates all Commonwealth owned airports within Australia. The Act specifies that there must be an Airport Master Plan and an Airport Environmental Strategy for all privately leased Commonwealth owned airports within Australia. The Airports Act and associated regulations set out an Australian Government regime for land use planning and the regulation of building activities at airports. In particular:

- Section 70(2) states that a final master plan for an airport is to:
    a. Establish the strategic direction for efficient and economic development at the airport over the planning period of the plan
    b. Provide for the development of additional uses of the airport site
    c. Indicate to the public the intended uses of the airport site
    d. Reduce potential conflicts between uses of the airport site, and to ensure that uses of the airport site are compatible with the areas surrounding the airport
    e. Ensure that all operations at the airport are undertaken in accordance with relevant environmental legislation and standards
    f. Establish a framework for assessing compliance at the airport with relevant environmental legislation and standards

g. Promote the continual improvement of environmental management at the airport

- The Airports Act requires an MDP for each major development at a regulated airport. Section 89 of the Airports Act prescribes those activities that are included as a 'major airport development';
- Section 91 specifies the contents of a MDP;
- Section 112 specifically excludes State laws from applying in relation to land use planning and the regulation of building activities at airports;
- Section 132 of the Airports Act provides that the regulations (e.g. the AEPR) may make standards and impose requirements that are to be complied with in relation to, or in relation to the prevention or minimisation of:

  a. Environmental pollution (including air, water or soil pollution) generated at airport sites; or

  b. Impacts on biota or habitat; or

  c. Interference with sites of heritage value; or

  d. Interference with sites of significance to Aboriginal or Torres Strait Islander people; or

  e. The emission of noise generated at airport sites (other than noise generated by aircraft in flight); or

  f. The disposal or storage of waste at airport sites.
- The Airports Act also provides for the monitoring, and remedying breaches of, environmental standards at airports; and
- Section 182 provides for the protection of airspace around airports and states that activities that result in intrusions into prescribed airspace are called 'controlled activities', which require approval.

3.1.1.2 Relevance to the Project

3.1.1.2.1 Section 70(2) – Master planning

BAC prepares a Master Plan every five (5) years in accordance with the requirements of the Airports Act. The applicability of the BAC Master Plan to the Project is discussed in Section 3.4 below, while the Project's compliance with the Airport Environment Strategy is discussed in Section 3.4.1.3.

3.1.1.2.2 Section 89 – Need for an MDP

Section 89 of the Act prescribes those activities that are included as a major airport development. The Project outlined in this MDP is defined as a 'major development' by virtue of Section 89(9):

For the purposes of this section, the threshold amount is:

(a) $25 million; or

(b) if an amount is determined in an instrument under subsection (10) and is in effect in accordance with subsection (11)—that amount.

The Project triggers the requirement for a MDP as construction costs are anticipated to be in the order of $85 million.

3.1.1.2.3 Section 90 – Approvals process

Major airport developments must not be carried out except in accordance with an approved MDP. This MDP has been prepared to meet the requirements of the Airports Act as outlined above, in particular the requirements as listed in Section 91.

The key steps in the approval process for an MDP are presented in Figure 7. An important implication of this process is the requirement that the MDP be made available for public comment for 60 business days.

3.1.1.2.4 Section 91 – Contents of major development plan

An MDP checklist is provided in Appendix A to demonstrate the Project's compliance with Section 91 of the Airports Act.

It is noted item 1(b) in Section 91 requires *"assessment of the extent to which the future needs of civil aviation users of the airport, and other users of the airport, will be met by the development."* The Project site is not suitable for civil aviation purposes as it is bounded by two major roads, Moreton Drive and Airport Drive and is not connected to any airside operations, such as runways, taxiways, hangars or terminal buildings. Under the Master Plan, the Project site is not intended for civil aviation purposes (refer Section 3.4) and therefore further assessment of the extent to which the Project addresses the future needs of civil aviation users is not required.

The key steps in the approved process for an MDP is presented in Figure 7.

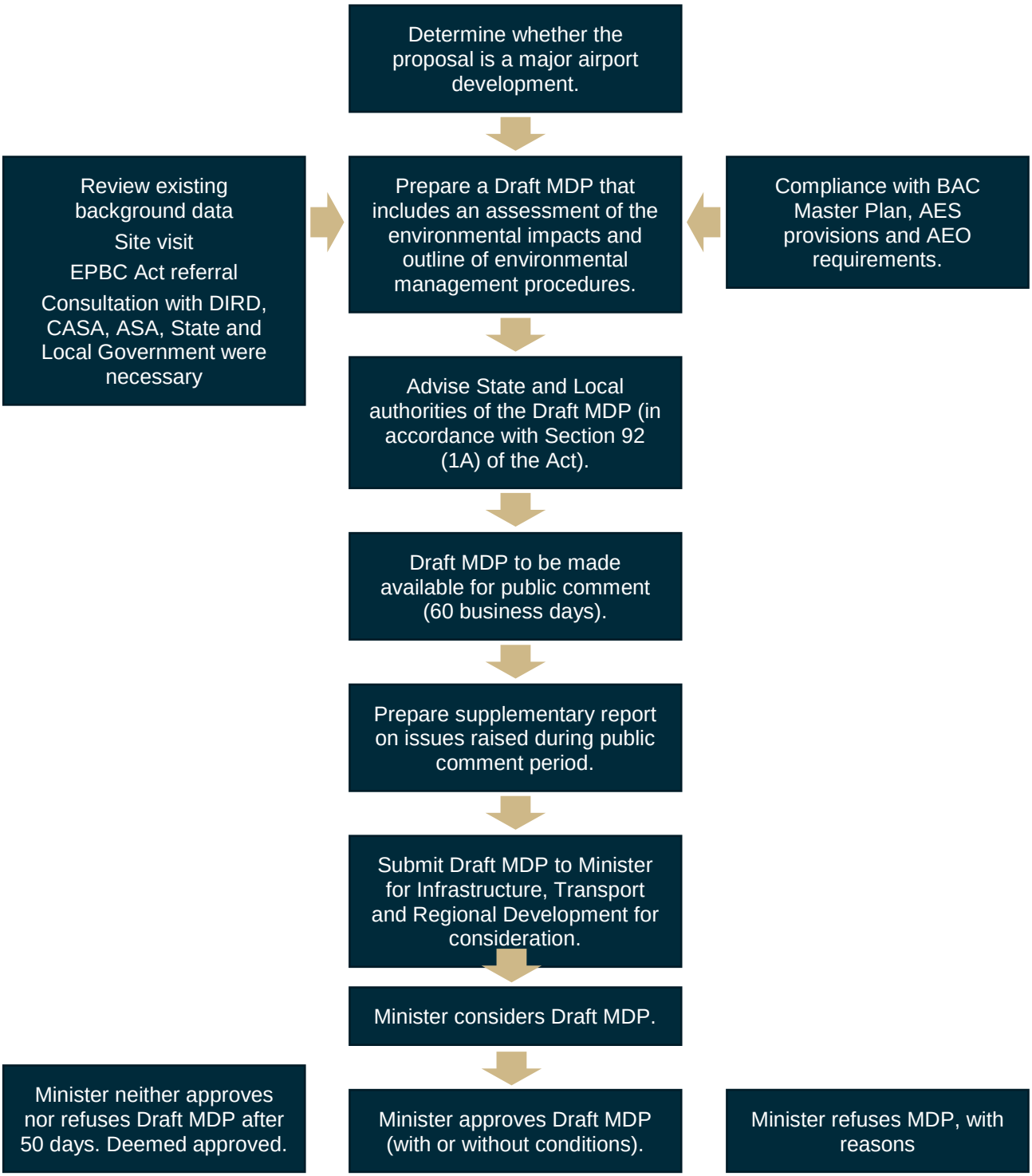


Figure 7 MDP Approval Process

Note: The MDP approval protocols subject to provisions contained under the Commonwealth *Airports Act 1996*. The Minister for Infrastructure, Transport and Regional Development is responsible for deciding whether to grant approval or refuse the MDP.

3.1.2 Environmental Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the Act as matters of national environmental significance (MNES). There are nine MNES currently protected under the EPBC Act, these are:

- World Heritage properties;
- National Heritage properties;
- Wetlands of international importance;
- Nationally threatened species and communities;
- Migratory species;
- Commonwealth marine areas;
- The Great Barrier Reef Marine Park
- Nuclear actions; and
- A water resource, in relation to coal seam gas development and large coal mining development.

The EPBC Act also protects the environment where actions are on or will affect Commonwealth land and regulates those actions of Commonwealth departments and agencies that may have a significant impact on the environment. As Brisbane Airport is located on Commonwealth land it is subject to the provisions of the EPBC Act.

Under the EPBC Act, if an action will have or is likely to have a significant impact on MNES or is deemed to require approval under Section 26 or 28 of the EPBC Act by nature of a potential significant impact on Commonwealth land or by a Commonwealth agency, a referral should be made to the Minister for the Environment. The Minister for the Environment would decide if the impacts are significant and whether an approval is required. The Minister for the Environment’s response to the referral would determine the level and nature of environmental assessment required for final approval by the Minister for Infrastructure, Transport and Regional Development.

Based on the assessment detailed in Section 6.2, the proposed development, including construction and operation, is not likely to result in a significant impact on a MNES or the environment. No referral under the EPBC Act is therefore required.

3.2 Pre-existing Airport Land

When BAC became the airport-lessee company for Brisbane Airport in July 1997, it assumed certain pre-existing lessor obligations under various leases. BAC also became the head-lessee under the airport lease subject to a number of other interests in the airport land (such as easements). Some of those contractual and other rights remain in existence. Others have expired.

BNE Auto Mall is impacted by the Energex Lease EGXA on SP232747 for 110 kV cables and a permit for 33 kV cable installations, which traverse the south-western end of the development area, running between Moreton Drive and Airport Drive. There are no other contractual obligations affecting the site.

3.3 Consistency with Airport Lease

An essential requirement of the lease is that the lessee must comply with all legislation relating to the airport site. In particular, Section 91 (1A) of the *Airport Act 1996* states that all major development is to be consistent with the airport lease.

As such, Table 6 provides an assessment of the BNE Auto Mall against the relevant clauses within the airport lease.

Table 6 Assessment against airport lease

Clause	Description	MDP Alignment
6	BAC is to maintain the environment of the airport site in accordance with legislative requirements and meeting the commitments set out in the Airport Environment Strategy.	The BNE Auto Mall has been designed in accordance with the Airport Environment Strategy, with the overall goals for sustainability, energy management, air quality and emissions, water management and noise managed effectively as part of the detailed design of the project. Further discussion is provided in Section 3.4.1.3. Additionally, the BNE Auto Mall has been designed in accordance with legislative requirements, including the EPBC Act, as demonstrated in Sections 3.1.2 and 6.
12.1	BAC is to develop the site throughout the term of the lease having regard to: (a) the actual and anticipated growth in, and pattern of, traffic for the airport site; (b) the quality standards reasonably expected of such an airport in Australia; and (c) Good Business Practice	The BNE Auto Mall has been designed to ensure consistency with BAC's Ground Transport Plan and will be integrated within the existing transport network as detailed in Section 3.4.1.2. Further assessment of the ground transport associated with the BNE Auto Mall is provided in Section 5.1. Additionally, the BNE Auto Mall has been designed according to high quality standards that are expected for airport development in Australia. This has been demonstrated through consistency with the State and Local government planning instruments (Section 3.5), the operational assessment (Section 5) and the environmental assessment (Section 6). Furthermore, the BNE Auto Mall Development Plan (Appendix C) has been established to support and deliver integrated development within the Brisbane Airport. The BNE Auto Mall has also been designed to be a world class place for businesses where all tenants will be required to demonstrate with Good Business Practice.

BAC, as the Airport Lessee Company for Brisbane Airport, also has an obligation to ensure all developments on airport land are consistent with the legislation, and development to maintain appropriate urban planning and ensure safe and sustainable outcomes. In particular, BAC must confirm that any proposal on airport land is consistent with:

- The final Master Plan for the airport;
- Any approved Major Development Plan for the airport (*Airports Act 1996*, section 89), if applicable;
- The approved Airport Environment Strategy;
- BAC's planning objectives for the airport; and
- Transport Security Plan and Critical Infrastructure Protection Specifications and Guidelines.

The BNE Auto Mall is deemed consistent with the above documents, with further discussion provided in Section 3.4.

With BAC's guidance, the development will be constructed in line with the provisions of the *Airports (Building Control) Regulations 1996* and *Airports (Environment Protection) Regulations 1997* in accordance with lease requirements.

3.4 Consistency with the Brisbane Airport Master Plan

An Airport Master Plan is a statutory document under the Airports Act. The Airport Master Plan is to be produced every five years and approved by the Australian Government to guide future projects and activities on airport land. The *Brisbane Airport Master Plan 2020* (2020 Master Plan) was submitted to the Minister for Infrastructure, Transport and Regional Development on 10 January 2020 and intends to replace the *Brisbane Airport Master Plan 2014* (Master Plan).

The 2020 Master Plan is generally consistent with the 2014 Master Plan with minor adjustments such as small areas (not within the Project site) subject to rezoning and updates to reflect changes in State and Local Government legislative requirements and guidelines.

To align with the future direction of Brisbane Airport, an assessment of the Project against both the 2014 Master Plan and 2020 Master Plan has been undertaken.

3.4.1 Brisbane Airport Master Plan 2014

The Master Plan provides the planning framework for the development of the site to 2034 and beyond. Approved by the Federal Minister on 13 January 2015, the Master Plan sets out land use zonings that reflect the intended uses within the leased airport site.

The Master Plan provides a 20-year strategic direction for development of Brisbane Airport and the basis for planning of aviation activity, landside development, environmental management and transport access in an integrated way. It also provides Commonwealth, State and local government agencies, potential investors and the community with a statement of the way in which Brisbane Airport intends to grow and develop.

The vision for Brisbane Airport is *"to be world class – a distinctive place that visitors keep coming back to, and to be the best possible partner for airlines and businesses"* by:

- Promoting and evolving Brisbane Airport's role as a major economic engine for Australia;
- Developing Brisbane Airport as a premier gateway airport and a multi-modal transport hub;
- Creating a prosperous airport business community within a sustainable environment; and
- Achieving growth and development by balancing economic benefits and environmental impacts.

3.4.1.1 Land Use Plan

An essential element of the Master Plan is the Land Use Plan, which outlines the intended land use and zoning for on-airport land holdings. The Master Plan establishes five (5) key precincts and nine (9) sub-precincts (refer to Figure 8). The BAC vision for precinct development is to create integrated development clusters that capitalise on airport assets whilst achieving best practice built form, landscape and open space design and increased access and connectivity. In establishing the precincts, and sub-precincts, a high-level emphasis is placed on creating and maintaining clusters of businesses and land use synergies that generate a strong sense of identity and community.

The BNE Auto Mall is wholly located within the Airport Drive West sub-precinct of the Airport Central precinct, as illustrated in Figure 9 and Figure 10.

The intent for Airport Central precinct is:

- Concentrated activity with high quality urban public realm;
- Energetic precinct for events and 24-hour gateway; and

- Created as the airport spine, it attracts naturally ventilated and quality sub-tropical realm.

BAC outlines a five (5) year property development strategy (refer Figure 8) in the Master Plan for each precinct. The property development strategy for Airport Drive West precinct between 2014 and 2019 focuses on uses such as shops and showrooms which reinforce the land use zoning of Airport Drive West as Mixed Use.

Under the Master Plan, the Mixed-Use zone "*is dedicated to mixed use development clustered into commercial nodes to provide employment opportunities in highly accessible locations*." Within this zoning, on-airport ancillary land uses include retail, commercial, leisure, entertainment, recreation and service industry activities to support the local workforce and contribute to the mixed-use activities.

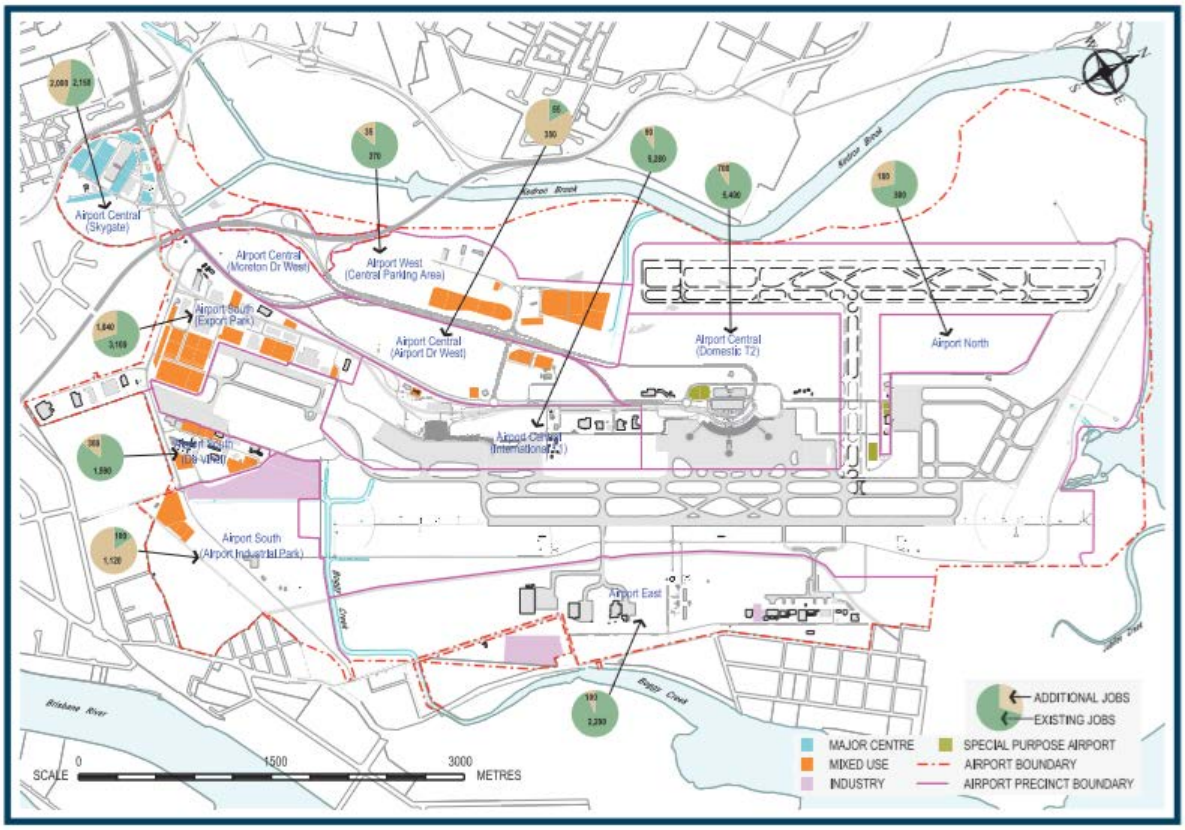


Figure 8 Five-Year Property Development Plan

Table 6.9 in the Master Plan outlines the purpose, outcomes and intended uses for the Mixed Use zone. The following uses are listed as intended uses to be located within the Mixed Use zone:

- Showroom;
- Major sport, recreation and entertainment facility;
- Outdoor sales;
- Shop; and
- Recreation and sport facility.

Table 7 below demonstrates how the Project aligns with the outcomes sought for land within the Mixed Use zone.

Table 7 MDP alignment with outcomes for Mixed Use zone

Outcome	MDP Alignment
Provide for a diverse mix of uses tailored to the role and function of Brisbane Airport and its surrounding area and to enable a level of economic and social activity to serve the intended mix of visitors, workers and residents.	The Project is anticipated to provide for a diverse mix of uses including showrooms, event entertainment facilities, sport, recreation and entertainment facilities, outdoor sales and retail spaces. The Project will bring into productive use land that is currently undeveloped and earmarked for future mixed-use development. The proposed land uses are expected to contribute significantly to the economic development and employment opportunities for the Brisbane Airport. The Project will be tailored to stimulate development activity at the Brisbane Airport and social activity by operating seven days a week. Further, the range of land uses will offer a variety of experiences and opportunities for local, national and international visitors and media.
Provide premises to accommodate firms seeking to combine their corporate office and manufacturing and distribution industry functions.	The Project will be designed to function as a premium destination for automotive manufacturers, potential buyers of new and used cars, as well as the public interested in automotive experiences. It is anticipated that corporate offices for the automotive manufacturers will be provided within the dealerships as part of the development, allowing businesses to combine their industry functions.
Provide for a mix of industrial activities, commercial enterprises and workshops, facilitated and supported by office activities set in a business park environment.	The Project is anticipated to provide for a mix of land uses with a performance track, dealerships and brand experience centres supported by office activities within the buildings to promote an automotive themed business park environment.
Development provides for a wide range of industry and business uses, including clean low impact industry, research and technology facilities, knowledge creation and entrepreneurial activities and service industries that are more compatible with urban areas.	The Project is envisaged to provide a world-class destination for automotive manufacturers and dealers, buyers of new and used cars, as well as the public and motoring enthusiasts interested in a diverse range of exciting automotive experiences. A key component of the development will be multi-purpose performance tracks offering an exciting experience combined with high quality support amenities for manufacturers that will together provide an unrivalled platform to support the promotion of vehicles and their respective brands and deliver exceptional customer experiences.
Development results in a use that activates the Mixed Use zone at different times of the day and week to create a vital and vibrant environment.	The diverse mix of land uses are to contribute and reinforce the Project site being earmarked as a mixed-use area. Further, the performance track is intended to be fully lit to accommodate night time events with the world class driving academy open to the public all year round except on exclusive corporate event days. With appropriate lighting for night time activities and operating seven days a week, the BNE Auto Mall is expected to activate the currently unused land at different times of the day and week to create a vital and vibrant environment.
Ensure a high quality commercial environment with an intensity and form of development that is tailored to the location.	The BNE Auto Mall precinct will be tailored to support the operation of Brisbane Airport by offering a world-class high quality tourist destination.

Outcome	MDP Alignment
Provide for development that capitalises on proximity to Australia TradeCoast and Brisbane Airport commercial environment.	It is considered that the proposed BNE Auto Mall will offer a high quality commercial environment that supports the intent for the area and reinforces the role of the Brisbane Airport as an activity centre.
Development of buildings is of a height, bulk, scale and form tailored to its specific location and to the characteristics of the site.	The buildings will be designed to appropriately integrate with the existing built form of the Brisbane Airport and respond to the sub-tropical climate to promote a high-quality design and finish.
Development provides a built form that creates a consistent and cohesive streetscape and aligns with pedestrian connections and shelter.	The BNE Auto Mall is anticipated to provide a built form that creates a consistent and cohesive streetscape that responds to the local context. Pedestrian movement will be supported by a network of pedestrian pathways, to be aligned to the internal road network. Pedestrian pathways will be proposed throughout the BNE Auto Mall to provide for safe pedestrian movement and support pedestrian connections to the existing external network. The pedestrian pathways will be lined with landscaping treatments to enhance the streetscape and walkways, be well lit, clearly defined and visible, be separated from car parking and vehicle manoeuvring areas and provide clear sight lines and surveillance of surroundings.
Development provides consistent and cohesive landscape and streetscape treatments.	The BNE Auto Mall will include landscaping around the perimeter of the site to provide for consistent and cohesive landscape and streetscape treatments. Developments showcasing vehicles will establish generous landscapes frontages to define the street. A consistent landscape palette will be adopted across the BNE Auto Mall with planting design and species will be selected to maximise shade and tree cover.
Development is sensitively designed and operated to avoid or mitigate any potential adverse impact on an adjoining use.	The Project will develop appropriate mitigation measures to ensure that any potential adverse impacts on adjoining or nearby land uses is avoided, mitigated and/or managed. Further discussion is provided in Section 6.6.
Enables interim uses within the zone prior to land being needed for development activities.	The Project involves the development of an existing undeveloped parcel of land that is currently earmarked to accommodate future mixed-use development.

The Project is considered to achieve the intent of the Master Plan by:

- Aligning with the purpose of the Mixed Use zone;
- Providing a distinctive place for business and visitors through well planned high quality development;
- Contributing to the diverse mix of uses across the entire Airport Central and supporting the ongoing viability and attractiveness of investment in Brisbane Airport's commercial precincts;
- Providing development to enable a level of economic and social activity in the area surrounding the Brisbane Airport to serve the intended mix of visitors, workers and residents;
- Contributing to the long-term growth of the Queensland and Australian economies;
- Providing additional direct employment opportunities in a highly accessible location;
- Achieving a balance between on-airport built environment and biodiversity values; and
- Achieving an integrated and complementary urban design and built form within this part of the Airport Drive West precinct.

Based on the above assessment, the Project demonstrates compliance with the Master Plan and will advance the land use intent and outcomes for the Mixed Use zone.

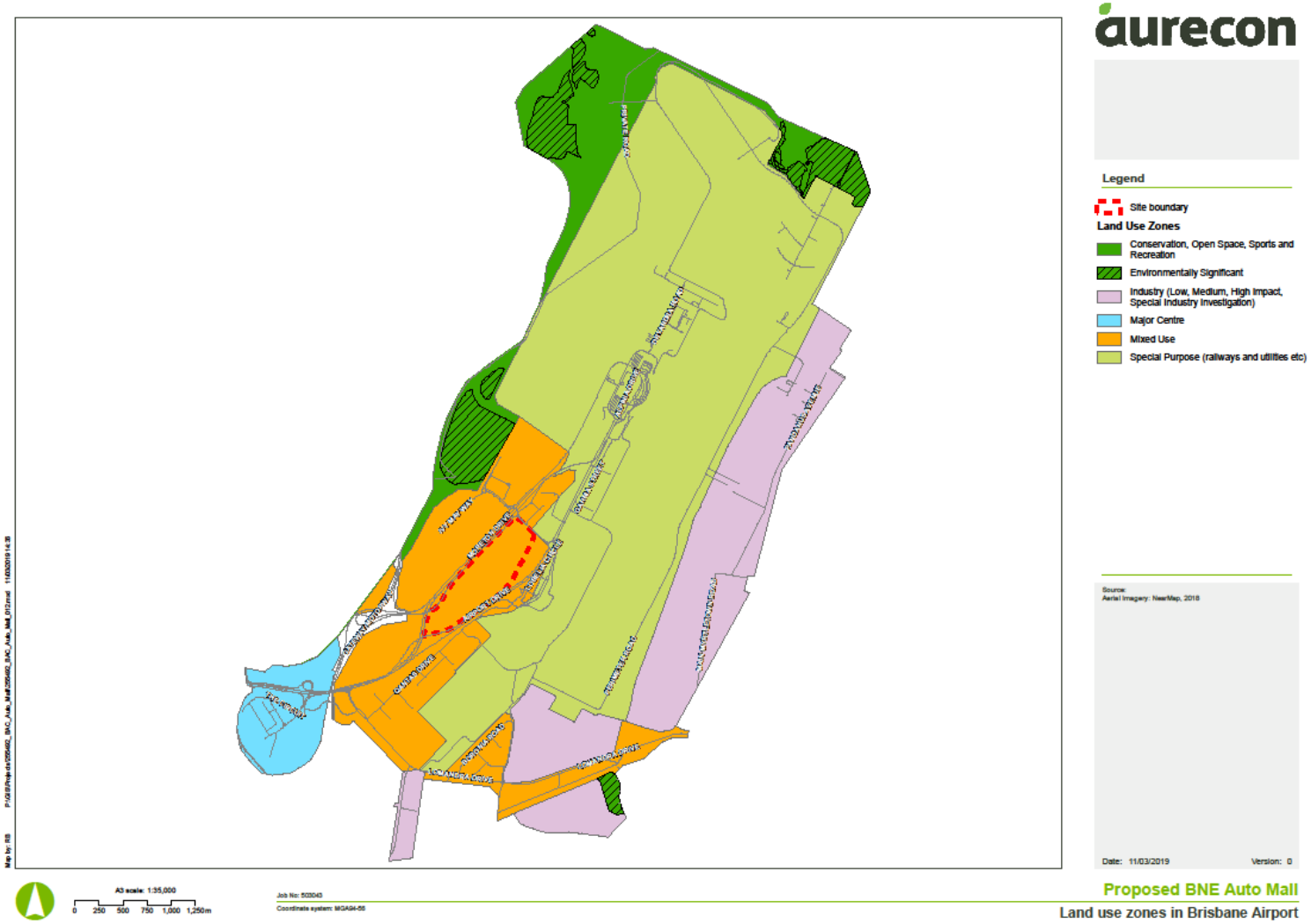


Figure 9 **Land use zones in Brisbane Airport with Project site boundary**

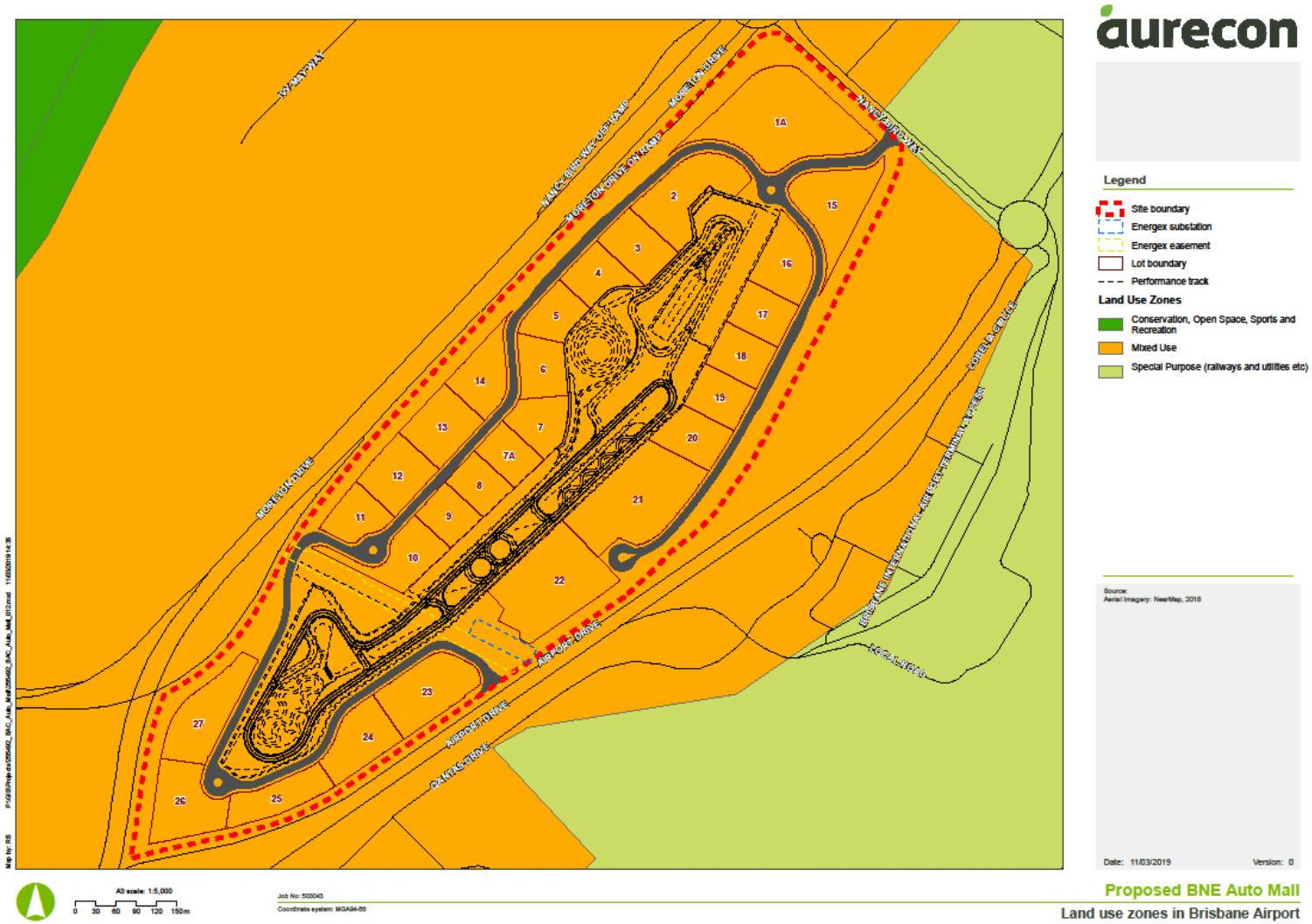


Figure 10 **BNE Auto Mall overlay on land use zones in Brisbane Airport**

3.4.1.2 Ground Transport Plan

3.4.1.2.1 Background

The Ground Transport Plan (GTP) forms part of the Master Plan and has been developed to report on the existing and future transport trends at Brisbane Airport. The GTP, identifies transport initiatives and actions to support the economic growth and target opportunities to improve capacity, provide transport choice and encourage sustainable transport modes (public transport and cycling). The GTP specifically focuses on the five-year period between 2014 and 2019, with an updated GTP to be provided as part of the 2020 Master Plan.

The objectives of the current GTP include:

- Maximise connectivity and accessibility;
- Facilitate safe and secure movement of people and freight;
- Deliver innovative, efficient and continuous airport services;
- Continue agency partnering which builds on an integrated transport connection plan;
- Timely delivery of seamless transport system that provides new and improved capacity;
- Minimise adverse environmental impacts;
- Deliver proactive response to climate change;
- Contribute to regional economic wealth and employment generation;
- Ensure selective, profitable and timely commercial development at Brisbane Airport; and
- Delivers on BAC's vision of world best and preferred choice for passengers, airlines, business and the community.

The GTP recommends ten initiatives to support these objectives and an assessment of the BNE Auto Mall against these initiatives is provided in Section 3.4.1.2.2.

3.4.1.2.2 Relevance to the Project

The BNE Auto Mall will be integrated within the existing transport network of the Brisbane Airport. Table 8 demonstrates how the Project aligns with the initiatives of the GTP.

Table 8 MDP alignment with the initiatives of the GTP

Initiative	MDP Alignment
Improve the on-airport road network	A permanent connection to the Project site will be made from Nancy Bird Way in late 2020, with a second permanent connection to the external road network provided off Airport Drive. The existing intersection for the International P2 Multi-Level Car Park (MLCP) on Airport Drive will upgraded as part of the Project (e.g. signalised or roundabout) and is planned to be commissioned in mid to late 2020. The detailed layouts of the access arrangements for Nancy Bird Way and Airport Drive are provided in Figure 14 and Figure 15. These upgrades are considered to align with the GTP initiative to improve the on-airport road network.
Improve the off-airport road network	The Project will not include specific improvements to the off-airport road network, however, the impact of the construction and operational Project traffic is anticipated to be within the acceptable range. Further discussion is provided in Section 5.1.

Initiative	MDP Alignment
Improve parking	Car parking areas will be designed to create a welcoming and comfortable space for employees and visitors. The BNE Auto Mall will provide on site car parking which supports the GTP initiative to accommodate visitors and/or employees on the Project site. The adopted car park rates for the BNE Auto Mall are discussed in Section 5.1.2 and in Appendix F. Event parking for special and major events can be accommodated offsite at the Central Parking Area and Banksia Place. Additionally, temporary on site parking is also provided on the vacant lots and is illustrated in Figure 13.
Improve the rail network and services	The Airtrain Station service runs every 15 minutes during peak hour and every 30 minutes on weekends, public holidays and during the off peak period of weekdays. BAC anticipates that the level of service will be increased for special and major events that are proposed on weekends and/or public holidays. However, this will be addressed as part of the Event Management Plan and subject to discussions with the regulator (refer Appendix B).
Improve taxi, bus, coach and shuttle services	While there are no TransLink bus services near the BNE Auto Mall, there are a number of buses managed by BAC, including the T-Bus, T-Bus Express, AirPark Bus and the S-Bus, service the International Terminal. The T-Bus and T-Bus Express connect the Domestic Terminal, International Terminal and Skygate. The S-Bus is a staff bus that services both international and domestic terminals and connects them to the staff car parking areas. With the development of the BNE Auto Mall, BAC will be responsible for managing the demand of the Brisbane Airport bus service and will increase the frequency, where necessary.
Support freight movements through the airport	The impact of the construction and operational traffic of the BNE Auto Mall on the external road network is predicted to be low (refer Section 5.1). As such, the Project will not impact on the efficient and safe freight movements on the external road network through the Brisbane Airport.
Improve active transport facilities at the airport and link to the external network	The Project site will include internal pedestrian pathways that provide for the equitable, efficient and safe movement of persons, including persons with a disability. Pedestrian and cyclist access will connect to the external network and public pedestrian areas within the Brisbane Airport. The existing and future bikeway and pedestrian pathways are illustrated in Figure 13. Improvements to active transport facilities will maximise connectivity and accessibility through the Project site, contribute to an integrated transport connection plan for the Brisbane Airport and deliver a proactive response to climate change by encouraging active transport.
Improve information and signage for travel to, from, and within the airport	The Project site will be integrated within the existing Brisbane Airport network and include information, signage and wayfinding for the BNE Auto Mall as well as individual tenancies. All lots will have an internal road frontage with at least one other frontage to an external road. The frontages to external roads may accommodate building identification signage as well as brand flags to provide way-finding to key destinations within BNE Auto Mall. As such, the Project will improve information and signage for travel to, from and within the Brisbane Airport.

Initiative	MDP Alignment
Encourage passengers to use alternative modes	Pedestrian access will predominantly be to and from the Airtrain Station and surrounding bus stops given the Project site's distance from residential areas. There are a number of buses managed by BAC that service the International Terminal and connect the Domestic Terminal, International Terminal and Skygate. The BNE Auto Mall will be integrated within the existing transport network of the Brisbane Airport which encourages passengers to use alternative modes of transport as oppose to private vehicle use. The BNE Auto Mall will connect to the Airtrain Station at the Brisbane International Terminal, with services departing the Airtrain Station every 15 minutes during peak hour and every 30 minutes on weekends, public holidays and during the off peak period of weekdays.
Encourage employees to use alternative modes	Pedestrian access will predominantly be to and from the Airtrain Station and surrounding bus stops given the Project site's distance from residential areas. The nearest public transport stop available is the Airtrain Station at the Brisbane International Terminal, located approximately 500 m from the BNE Auto Mall. There is currently a bikeway route and pedestrian pathway that connects the Project site and the Airtrain Station. There is also a high standard of off-road active transport access to the Skygate precinct (west of the Project site) from the Kedron Brook Bikeway and cycle lanes and paved shoulders along Qantas Drive, Airport Drive (east of the International Terminal) and across to Nancy Bird Way to provide access to the Project site. Where applicable, BAC will require tenants to provide end-of-trip facilities in accordance with *Queensland Development Code (QDC) Mandatory Part 4.1 - Sustainable Buildings.* By ensuring connectivity to the external active transport network and the provision of end-of-trip facilities, the BNE Auto Mall will encourage employees to use alternative modes of transport as opposite to personal vehicles.

3.4.1.3 Airport Environmental Strategy

3.4.1.3.1 Background

BAC accepts responsibility for ensuring the implementation of environmental management measures proposed to mitigate environmental impacts identified in this MDP during construction and operation. This is to be achieved through the submission of this MDP and requiring a construction environmental management plan (CEMP) to be prepared and implemented by the construction contractor. The CEMP will be endorsed by BAC prior to issue to the AEO.

The AES is the formal blueprint of BAC's commitment to world best practice environmental sustainability. The AES outlines a framework for environmental management at Brisbane Airport and responds to the requirements of the Airports Act and AEPR. The AES now forms part of the Master Plan.

The 2014 AES was prepared in accordance with the Airports Act and AEPR. It covers a wide range of issues including environmentally significant areas (ESAs), sources of environmental impact and environmental management. The environment and sustainability policy is seen as the foundation of the Environmental Management System (EMS) and AES and guides the implementation of both. The policy represents a formal undertaking by BAC to give due consideration to the potential environmental impacts of all aspects of BAC's activities and operations.

The AES covers all environmental matters arising from the operation and expansion at the Brisbane Airport site in accordance with the Airport Legislation. Each of the sections detailed in the AES are in direct response to the specific requirements listed in the Airport Legislation. The AES does not cover noise and air pollution from aircraft movements, which is regulated under separate legislation, the Commonwealth *Air Navigation (Aircraft Engine Emissions) Regulations* and *Air Navigation (Aircraft Noise) Regulations*.

The AES adopts relevant legislation that is applicable to environmental regulation or activities on airport (whether Commonwealth or State) where reasonable and practicable. The AES also identifies areas as ESAs.

3.4.1.3.2 Relevance to the Project

A contaminated land assessment was conducted for the site prior to the commencement of the land development works (Phase 1). During this assessment, a known contaminated site was detected at the southern end of the development area. Minor concentrations of metals/metalloids were also found above the AEPR. However, it was determined the contamination presented no risk to human health and/or the environment. Should any unexpected contamination be encountered during excavation works, mitigation measures have been identified in Section 6.1 of this MDP. Mitigation measures include engaging a suitably qualified consultant to provide additional management strategies, management of waste spills, appropriate storage and ongoing monitoring.

While the site is identified as having little to no heritage value, it has the potential to contain items or sites that may be unearthed during construction. Section 6.9.3 details mitigation measures to avoid/minimise disturbance of cultural heritage.

The Kingsford Smith Memorial, which contains the Southern Cross aircraft adjoins the development area. The Memorial is significant at a State or Commonwealth level for its historic significance, rarity, aesthetics, technical achievements and associative values. However, it is not currently listed on any statutory heritage register. Consideration has been given to the potential impacts (e.g. dust, vibration) from the Project on the Kingsford Smith Memorial. It is noted, however that building sealing, filter maintenance and other building improvement were undertaken on the Kingsford Smith Memorial prior to the land development works (Phase 1). Dust and vibration monitoring are currently ongoing since the commencement of the land development works (Phase 1) in September 2017.

Furthermore, the Squadron 460 Memorial, located 100m from the site to the east, has some local heritage value, although it is not listed on any statutory heritage register. Mitigation measures have been identified including continuation of dust and vibration mitigation measures during construction and to ensure all staff have completed a site induction. Further discussion relating to the heritage considerations is provided in Section 6.9.

The development area is not identified as being impacted by a vegetation community as the site has previously been cleared. The first phase of preparatory works (including earthworks and clearing) has been conducted in accordance with a construction environmental management plan (CEMP).

The overall goals for sustainability, energy management, air quality and emissions, water management and noise can be managed effectively as part of the detailed design of the project.

In view of the above, the Project is consistent with the 2014 AES and does not affect any areas identified as ‘environmentally significant sites.’

BAC accepts responsibility for ensuring the implementation of environmental management measures proposed to mitigate environmental impacts identified in this MDP during construction and operation. This is to be achieved through the submission of this MDP and requiring a CEMP to be prepared and implemented by the construction contractors. The CEMP will be approved by BAC prior to issue to the AEO.

3.4.2 Brisbane Airport Master Plan 2020

The 2020 Master Plan considers all aspects of airport operations for the next five years, including the planning framework for new development and aviation activity, environmental management and transport planning. The Master Plan also considers strategic investment opportunities and initiatives at the Brisbane Airport over a 20-year planning horizon.

The fundamental theme of the 2020 Master Plan is to plan for growth and to create Brisbane Airport’s future. The BNE Auto Mall features in the 2020 Master Plan as a unique development opportunity that is ‘certain’ to

increase visitation to the Brisbane Airport, create new jobs and greater prosperity for the region. The development objectives of the Master Plan have been grouped into four pillars of focus:

- Growing Aviation Markets
- Excellence in Customer Satisfaction
- Supporting Business Growth
- Driving Economic Prosperity

The BNE Auto Mall aligns with these overarching development objectives, as demonstrated in Table 9.

Table 9 MDP alignment with Development Objectives

Pillar	MDP Alignment
Growing Aviation Markets • Increasing connectivity • Delivering capacity to meet demand • Secure, safe and efficient airport operation • Investing in collaborative partnerships	The Project will provide a unique opportunity to develop the performance track with a host of associated facilities. The Project is set to increase visitation to the Brisbane Airport and therefore is likely to contribute to growth in the aviation market through an increase in passengers and visitors (ie tourists) to Brisbane.
Excellence in customer satisfaction • Smarter journeys • Accessibility for all • Better journeys	The Project is set to be a landmark destination for the Brisbane Airport and provide additional leisure and retail experiences for passengers, workers and visitors. The Project will provide a range of land uses from sport and recreation to retail that will be accessible to all members of the community. The Project includes landside improvements to pedestrian connectivity, incorporating a pedestrian network the promotes equitable, efficient and safe movement of persons, including persons with a disability, and contributes to pedestrian friendly streets and accessible places where people can meet.
Supporting business growth • Creating collaborative business neighbourhoods • Maximising ground connectivity • Investing in sustainability • Connecting business	The Project is anticipated to provide for a mix of land uses with a performance track, dealerships (ie local and international) and brand experience centres supported by office activities to promote an automotive themed business neighbourhood. The Project will provide a distinctive place for business and visitors through well planned high-quality development. The Project will maximise ground connectivity by incorporating design features to promote public and active transport to and from the Project site via an internal bus service and shared bicycle and pedestrian pathways. The key sustainability initiatives that are being investigated as part of the design for the BNE Auto Mall include: • Renewable energy (eg Solar PV) • LED lighting • Climate change resilience assessment • Electrical vehicle charging • Re-use of rainwater

Pillar	MDP Alignment
Driving economic prosperity • Enabling growth in economic wealth • Proactive community engagement • Enabling long term job creation • Connecting Brisbane to the world	The Project will bring into productive use land that is currently undeveloped and earmarked for future mixed-use development. The proposed land uses are expected to contribute significantly to economic development and prosperity, as well as enable employment opportunities. The Project will be tailored to stimulate development activity at the Brisbane Airport and social activity by operating day and night, seven days a week. Further, this new landmark destination will provide a range of land uses that will offer a variety of experiences and opportunities for local, national and international visitors and media, contributing to Brisbane's connection to the rest of the world.

3.4.2.1 Land Use Plan

A key component of the 2020 Master Plan is the Land Use Plan. The on-airport land holdings are divided into five separate land use zones, consistent with the 2014 Master Plan. The BNE Auto Mall is wholly located within the Mixed Use Zone, as illustrated in Figure 11.

The purpose of the Mixed Use Zone is to provide for development that includes a range of land uses such as business, retail, tourism, short term accommodation and industrial. The 2020 Master Plan identifies possible uses within the Mixed Use Zone, including (but not limited to) event facility, function facility, food and drink outlet, hotel, office, major sport and recreation and entertainment facility, shop, showroom and tourist information centre.

The Mixed Use Zone is highly accessible with access to public and active transport nodes, private vehicle parking and in close proximity to airport operations. As such, the Zone provides opportunities for compatible employment generating activities to be clustered into commercial nodes. The 2020 Master Plan identifies development objectives for new development within the Mixed Use Zone that generally aligns with the development outcomes for the Mixed Use Zone under the 2014 Master Plan. Based on the assessment above, the Project is consistent with the 2020 Land Use Plan.

3.4.2.2 Ground Transport Plan

The 2020 GTP includes both short and longer-term initiatives designed to extend and improve the range of transport services offered at Brisbane Airport. The 2020 GTP considers opportunities to further improve and broaden the range and frequency of services offered, to drive connectivity, improve efficiency and increase user satisfaction. Future transport planning at the Brisbane Airport will be governed by three guiding principles:

- Meeting customer needs
- Vision and resilience
- Performance and partnership

Table 8 demonstrates how the Project aligns with the guiding principles of the 2020 GTP.

Table 10 MDP alignment with the principles of the 2020 GTP

Principle	MDP Alignment
Meeting customer needs	The Project will include a range of on-airport road network improvements such as: • A permanent connection to the Project site will be made from Nancy Bird Way in late 2020, with a second permanent connection to the external road network provided off Airport Drive. • The existing intersection for the International P2 Multi-Level Car Park (MLCP) on Airport Drive will upgraded as part of the Project (e.g. signalised or roundabout) and is planned to be commissioned in mid to late 2020. These upgrades will improve access on the on-airport road network, particularly for private vehicles. Car parking areas will be designed on site to create a welcoming and comfortable space for employees and visitors. Further, the Project will include landside improvements to pedestrian connectivity with a pedestrian network that promotes equitable, efficient and safe movement of persons, including persons with a disability, and contributes to pedestrian friendly streets and accessible places where people can meet.
Vision and resilience	Car parking areas will be provided on the Project site for visitors, passengers and employees. To accommodate new technologies and a changing transport industry, an allowance for electrical vehicle charging will be investigated for the Project. The Project will also encourage passengers and employees to use active and public transport nodes by ensuring connectivity to the external active transport network through shared bicycle and pedestrian pathways and the provision of end-of-trip facilities, where applicable. The Project will also provide an internal bus service connecting to nearby public transport stops.
Performance and partnership	The Project will incorporate strategies to enhance the Brisbane Airport's ground transport through a connected, flexible and sustainable transport network. BAC will provide an internal bus service connecting the BNE Auto Mall with the wider Brisbane Airport precinct. BAC will closely monitor the demand for the Brisbane Airport bus service and will increase the frequency, where necessary to ensure the performance and frequency of the service is meeting customer demand. Further, the Project site will include internal pedestrian pathways that provide for the equitable, efficient and safe movement of persons, including persons with a disability. Pedestrian and cyclist access will connect to the external network and public pedestrian areas within the Brisbane Airport. The existing and future bikeway and pedestrian pathways are illustrated in Figure 13. Improvements to active transport facilities will maximise performance, connectivity and accessibility through the Project site, contribute to an integrated transport connection plan for the Brisbane Airport and deliver a proactive response to climate change by encouraging active transport.

3.4.2.3 Airport Environmental Plan

The 2020 AES continues to demonstrate BAC's commitment to world best practice environmental sustainability. Similarly to the current AES, the 2020 AES outlines a framework for environmental management at Brisbane Airport and responds to the requirements of the Airports Act and AEPR.

The 2020 AES includes ESAs, sources of environmental impact and environmental management that are generally consistent with the current AES. To avoid duplication, based on the assessment provided in Section 3.4.1.3, the Project is considered to align with the environmental sustainability outcomes in the 2020 AES.

Figure 11 Land use zones in Brisbane Airport with Project site boundary

3.5 Consistency with State and Local Government Planning

Being Commonwealth land, planning requirements for the airport land are administrated under the *Airports Act 1996* and other relevant legislation such as the EPBC Act. As a result, state and local planning development provisions are not applicable to development occurring at the airport.

The Act, does however, require that a MDP must address where possible, the extent (if any) of any inconsistencies with planning schemes in force under a law of a State or Territory in which the airport is located. This requirement is addressed below.

3.5.1 State Planning Policy

In preparing this MDP, consideration has been given to the State Planning Policy (SPP) operating in Queensland and effective at the time of publishing this MDP. The SPP is a statutory instrument under the *Planning Act 2016* and has the force of law in Queensland (Department of Infrastructure, Local Government and Planning 2017). Adopted in 2017, the SPP provides a consolidated and comprehensive statement on the state government's interest in planning and development.

The SPP has five (5) overall themes and 17 'state interests'. The following state interests from the SPP are considered to have direct relevance to Brisbane Airport and are recognised in the Master Plan:

- Biodiversity;
- Coastal environment;
- Emissions and hazardous activities;
- Natural hazards, risk and resilience; and
- Strategic airport and aviation facilities.

It is also considered that the state interest for development and construction is relevant to this MDP and is consequently addressed below with the other relevant state interests.

3.5.1.1 Biodiversity

The SPP mapping identifies "*regulated vegetation (intersecting a watercourse)*", *"regulated vegetation",* "*Matter of State Environmental Significance (MSES) - High Ecological Significance wetlands*" and *"MSES – Wildlife habitat"* within the MDP development area. However, the area in which the Project is to be located is highly modified with existing and future development proposed as part of the Master Plan.

3.5.1.2 Coastal Environment

Brisbane Airport land is located on the coastline of Moreton Bay and is affected by the coastal environment. The state interest statement for coastal environment is *"is protected and enhanced, while supporting opportunities for coastal-dependent development, compatible urban form, and maintaining appropriate public use of and access to, and along, state coastal land."*

The Master Plan recognises the importance of managing the coastal environment within BAC land holdings and is committed to effective protection of the coastal environment through the 2020 AES. The 2020 AES recognises much of this land as both 'biodiversity zone' and 'environmentally significant area'. Both of these environmental areas are protected accordingly under the 2020 AES. Airport Drive West is well removed from the environmental areas within the coastal environment.

3.5.1.3 Development and Construction

The State interest statement for development and construction is "*planning supports employment needs and economic growth by facilitating a range of residential, commercial, retail and industrial development opportunities, and by supporting a strong development and construction sector*."

This State interest encourages responsible development that supports growth in the construction industry. The proposed BNE Auto Mall is to be located on a site that is earmarked for mixed use development clustered into commercial nodes. The Project is considered to address this state interests as the construction of this project will contribute positively to the construction industry and is in accordance with the land use planning program adopted by BAC.

3.5.1.4 Emissions and Hazardous activities

The State interest statement for emissions and hazardous activities is *"Community health and safety, sensitive land uses and the natural environment are protected from potential adverse impacts of emissions and hazardous activities, while ensuring the long-term viability of industrial development and sport and recreation activities".*

The land use strategy adopted in the Master Plan has been prepared with consideration for location of sensitive land uses in relation to industrial development that may cause emissions. The Airport Drive West precinct is not in proximity to any land earmarked for industrial use. Additionally, BAC adopted management practices and regular monitoring of air and noise quality to manage the effect of noise and air quality impacts on sensitive uses. BAC has a noise impact assessment policy which is used to inform future development of noise impacts associated with road and rail traffic.

3.5.1.5 Natural Hazards, Risk and Resilience

The State interest statement for natural hazards, risk and resilience is *"the risks associated with natural hazards are avoided or mitigated to protect people and property and enhance the community's resilience to natural hazards."*

The intent of this State interest is to minimise impacts of flooding, bushfires, storm tide inundation and coastal erosion. The MDP development area is located within a mapped bushfire hazard area – "High Potential Bushfire Intensity". However, area has previously been cleared of vegetation, thereby removing the risk from bushfires.

The Project site is also located in a high and medium storm tide coastal hazard area, and an erosion prone area. Appropriate mitigation measures will need to be adopted to address erosion and sediment control as described in Section 6.1.3.

The Auto Mall precinct will be protected from major flood events such as storm surge and remote catchment events which occur across the Kedron Brook Flood Plain. Resilience is proposed to be achieved by raising the perimeter Drain bund along the Airport Drive side of the precinct to a level which will achieve immunity from a 1%AEP Storm Surge plus a 10 % Local rain event which can occur external to the precinct.

In addition, the existing major culvert crossings will be installed with permanent tidal gates to prevent backwater from regional flood events and storm surge/tidal events entering the Precinct once developed. The drain and storage basins around the perimeter of the site will capture all flows from the development, once stormwater has passed through various sediment control devices (e.g. vegetated swales, bio pods etc.). As such, through the stormwater management and flood immunity controls, the BNE Auto Mall development will not adversely impact surrounding properties or waterways.

3.5.1.6 Strategic Airport and Aviation Facilities

The State interest statement for strategic airport and aviation facilities is *"planning protects the operation of strategic airports and aviation facilities, and enables the growth and development of Queensland's aviation industry."*

The proposed BNE Auto Mall reinforces Brisbane Airport as an essential element of the state and national transport system and a key contributor to economic development. The Project is located in an area identified by the Master Plan as acceptable for mixed use purposes. Furthermore, the BNE Auto Mall will not adversely impact on the safety, efficiency and operational integrity of the airport and aviation facilities, as described below:

- As 24 hour operations may be required, lighting may be used during construction and operation of the BNE Auto Mall will be designed in accordance with *Civil Aviation Safety Authority's (CASA) Manual of Standards Part 139 – Aerodromes (Lighting in the Vicinity of Aerodromes);*
- During construction, appropriate mitigation measures will be put in place to ensure emissions do not impact on air turbulence, visibility or compromise the operation of aircraft engines (refer Section 6.4.3);
- Project activities will not interfere with the function of aviation facilities;
- The Project site is not located within Brisbane Airport's public safety area; and
- Project activities will include sensitive land use/s (e.g. office space within the dealerships and brand experience centres) and as such, appropriate mitigation measures will be implemented to minimise impacts to surrounding land uses (refer Section 6.5.3).

3.5.2 Brisbane City Plan 2014

Brisbane Airport is located within the "Special Purpose (Airport) Zone" under Brisbane City Plan 2014 (City Plan). Council's Strategic Plan within the City Plan acknowledges the airport as being a major industrial location (as part of the broader Australia TradeCoast) which is a key centre in the city and provides major air access from the city for passengers and freight.

The purpose of the Special Purpose Zone in City Plan is to:

(a) provide for public facilities and infrastructure that are publicly or privately owned or operated; and

(b) ensure that incompatible uses do not encroach on the public facilities and infrastructure.

Overall outcomes of the Airport Zone Precinct of the Special Purpose Zone are:

(a) Development provides areas for:

(i) housing, servicing, maintenance and repair of aircraft;

(ii) landing and departure of aircraft;

(iii) assembly and dispersal of passengers and goods on or from aircraft;

(iv) ancillary activities serving the needs of workers, passengers and visitors to an airport, such as shopping, food and drink outlets and tourism services;

(b) associated training, education and aviation facilities.

3.5.2.1 Background

The *Brisbane City Plan 2014* (City Plan) is the local planning scheme that guides how land is used and developed in Brisbane. It also assists in planning for infrastructure growth and sets out provisions for development assessment. In accordance with Section 91 of the Airports Act, a MDP must address:

(a) the extent (if any) of consistency with planning schemes in force under a law of the State in which the airport is located; and

(b) if the major development plan is not consistent with those planning schemes—the justification for the inconsistencies.

The City Plan is made up of a Strategic Framework, zones, neighbourhood plans, overlays and development codes. Under the City Plan, the Project site is located within the Special Purpose (Airport) Zone and the Airport precinct of the Australia TradeCoast Neighbourhood Plan.

3.5.2.2 Relevance to the Project

The Strategic Framework for the City Plan identifies Brisbane Airport as being a key location for economic activity and provides key access points supporting the city's economy (*Theme 1 – Brisbane's globally competitive economy*) as well as a major industrial location (as part of the broader Australia TradeCoast) which is a key centre in the city and provides major air access from the city for passengers and freight (*Theme 5 – Brisbane's CityShape*).

The Project provides for a diverse mix of uses tailored to the role and function of Brisbane Airport and its surrounding area and will enable a level of economic and social activity to serve the intended mix of visitors, workers and residents. The mix of commercial uses proposed for the BNE Auto Mall reinforces Brisbane Airport's role as a key centre.

In addition, the Project will not detract or interfere with the Airport's key function as a gateway for people and freight to and from Queensland.

Therefore, the BNE Auto Mall aligns with the specific outcomes for the Brisbane Airport that form part of the Strategic Framework.

Further, Table 11 provides an assessment of the BNE Auto Mall against the overall outcomes of the Special Purpose (Airport) Zone Code.

Table 11 MDP alignment with outcomes for Mixed Use zone

Overall outcome	Compliance
Development location and uses overall outcomes are:	
Development provides for the continued use of land for a special purpose identified in the relevant zone precinct, together with anticipated, compatible and necessary complementary uses.	The BNE Auto Mall provides for land uses in accordance with the Airport Zone Precinct where the Project promotes tourism services in Brisbane and the wider South-East Queensland Region. The BNE Auto Mall is proposed to co-exist with the Brisbane Airport and provide activities for the visiting public as well as on-site users. The BNE Auto Mall proposes compatible and complementary land uses to the Brisbane Airport, with a number of examples provided in Section 2.2 where airports and motorsport complexes are successfully co-located. As such, the BNE Auto Mall complies with the overall outcome.
Development provides for special uses and works that are owned or operated by federal, State, local government or public-sector entity and may include defence establishments, airports, seaports, rail lines, rail stations, intermodal stations, major road infrastructure, major public transport infrastructure or the provision of water supply, sewerage, electricity, gas, telecommunications, transport, drainage or other like services.	This overall outcome conflicts with the intended use for the Project site under the Master Plan. While the BNE Auto Mall does not provide for special uses and/or works, the Project consists of proposed uses that are consistent with the intended outcomes of the Airport Drive West Sub-Precinct under the Master Plan.

Overall outcome	Compliance
Development contributes to the specific mix or type of uses envisaged in the zone precinct in an integrated and co-located manner to maximise site multifunctionality, efficient use of land and physical and social infrastructure, particularly where the proposed special purpose is not intended or cannot be easily accommodated in other centre zones at the scale or concentration required for optimal functioning.	The Project site is an optimal location for the BNE Auto Mall as the Project requires a substantial amount of vacant land in commercial and/or industrial areas, away from residential suburbs. As such, there is limited land suitable to accommodate the BNE Auto Mall in Brisbane which is easily accessible from the CBD. The Project includes the construction of appropriate infrastructure and services to support the BNE Auto Mall and that will connect to the existing external network. Further, the Project site has been earmarked for future mixed-use development. Currently, the site is unused and therefore the BNE Auto Mall will provide for the efficient use of the land in accordance with the Master Plan. As such, the Project complies with the overall outcome.
Development enables the re-use of land in the Special purpose zone to occur in an integrated manner should a special purpose cease.	The BNE Auto Mall will not prohibit the re-use of land should the development cease operations. Land will be rehabilitated, where necessary, to allow the re-use of the land.
Development that may limit the ongoing operation and expansion of existing uses or prejudice establishment of new uses appropriate to the specific nature of the relevant zone precinct is not accommodated.	The BNE Auto Mall will promote development activity and will not limit the ongoing operation and expansion of existing uses. In addition, the Project encourages the establishment of new uses appropriate to the Project site's close proximity to Brisbane Airport. Therefore, the Project complies with the overall outcome.
Development for a use not anticipated in the relevant zone precinct may be accommodated where it is demonstrated that the proposal is safe, well designed, integrated with the surrounding area and offers compensatory community benefits.	The Project may be accommodated on the Project site as tourism services are anticipated for the Airport Zone Precinct. Further, the BNE Auto Mall has been designed to a high-quality and will integrate with the surrounding area. The unique nature of the Project will offer community benefits by providing a world-class destination or automotive manufacturers and dealers, buyers of new cars as well as the general public and motoring enthusiasts interested in a diverse range of exciting automotive experiences. As such, the BNE Auto Mall complies with this overall outcome.

Overall outcome	Compliance
Development form overall outcomes are:	
Development is appropriately located according to the proposed use, and building and landscape design are of a scale, height and bulk that is generally compatible with the surrounding area and transitions sensitively to surrounding uses.	The BNE Auto Mall is appropriately located where the Project requires a substantial amount of vacant land in commercial and/or industrial areas, removed from residential suburbs. The proposed built form (height and bulk) will not exceed existing buildings on Airport land. The maximum height of the proposed buildings is 3 storeys and 12 m (as per Table 3). Further, the scale of the Project aligns with the busy nature of the Brisbane Airport which consists of 480 businesses and 23.2 million passengers in 2017 (BAC, 2017). The *BNE Auto Mall Development Plan* (Appendix C) has been developed to set in place clear overarching development objectives, parameters and defines the guiding ambition for the BNE Auto Mall.
Development creates a variety of building forms, materials and facade treatments.	The built form of the BNE Auto Mall will be defined by the dealerships and brand experience centres located around the perimeter of the performance track. The dealerships and brand experience centres will be constructed in accordance with the provisions of the BNE Auto Mall Development Plan, while catering to the specific needs of the tenant. The document promotes building forms, materials and façade treatments at a bold scale, advancing Brisbane Airport's reputation for excellence in planning and the built environment.
Development is provided with servicing and utilities infrastructure that are commensurate with the level of service demands of the use.	The BNE Auto Mall includes appropriate servicing and utilities infrastructure to support the development such as stormwater management, landscaped drainage swales and culvert drainage connections.
Development is supported by complementary uses of an appropriate scale and purpose to directly serve the employees and activities of the zone precinct, which do not compromise the commercial, retail or community service role and function of nearby centre activities.	The BNE Auto Mall will include a variety of experiences and opportunities for on-site occupiers and employees of surrounding businesses. Given the unique nature of the Project, BNE Auto Mall will not compromise the commercial, retail or community service role and function of nearby centre activities.

Overall outcome	Compliance
Development minimises adverse impacts (including glare, odour, light, noise, traffic, parking, servicing and hours of operation) on the health, safety and amenity of adjoining sensitive land uses, predominantly through maintaining adequate buffering between these land uses.	The Project site is located approximately 2 km from the closest residential area. Appropriate mitigation measures and management plans will be implemented to avoid any adverse impacts such as glare, odour, light, noise, traffic, parking, servicing and hours of operation. Further discussion on these mitigation measures are provided in the relevant sections of the operational and environmental assessment.
Development achieves a satisfactory standard of environmental performance by principles of innovative, sustainable and efficient design, construction and operation, to encourage water conservation and responsiveness to climate.	The BNE Auto Mall Development Plan promotes sustainable development and environmental practices to be incorporated into the design of the precinct and overall built form. The Project will aim to achieve a balance between on-airport build environment and biodiversity. Further, the BNE Auto Mall will incorporate consistent landscaping throughout the Project and promote sub-tropical design elements such as awnings, shade devices and mature trees.
Development maximises road, rail, public transport and transport connections and accessibility between the Special purpose zone and key destinations to ensure efficient and safe movement of people, goods and freight and accessibility for visitors, patrons and employees.	The BNE Auto Mall will provide connections to the existing public and active transport network through the construction of new pedestrian footpaths and bus stops. The Project site is accessible from the CBD from the Airtrain, with the International Airport Station opposite the Project. Further, visitors, patrons and employees are anticipated to drive to the BNE Auto Mall and therefore appropriate parking will be available on the site (refer Section 5.1) and in the surrounding area including Central Parking Area and Banksia Place for special and major events.
Development for a special purpose that is a major economic driver, such as a port or airport consolidates its role in facilitating trade growth via bringing allied industries, freight and tourism to the region and functioning as a major employment generator.	The BNE Auto Mall will bring tourism to the Brisbane and wider South-East Queensland region and complements the Airport's role as a major economic driver. Further assessment in relation to the economic impact is provided in Section 6.8.
Development is designed, constructed and operated to maintain the safety and security of people and property.	The BNE Auto Mall will be designed, constructed and operated to maintain safety and security of people and property. Security measures will be incorporated into the design of the precinct such as bollards and appropriate lighting in accordance with air traffic control requirements. Perimeter dealership lighting will be encouraged to remain on after hours for security purposes.

Overall outcome	Compliance
Development responds to land constraints, mitigates any adverse impacts on environmental values and natural features, and addresses other specific characteristics, as identified by overlays affecting the site or in codes applicable to the development.	While the Project is not required to specifically address the provisions of overlays under the local planning scheme, an environmental assessment for the BNE Auto Mall is provided in Section 6 of this MDP. The assessment provides mitigation measures to avoid, minimise and mitigate impacts on environmental values and natural features.
Airport zone precinct form overall outcomes are:	
Development provides areas for: • housing, servicing, maintenance and repair of aircraft; • landing and departure of aircraft; • assembly and dispersal of passengers and goods on or from aircraft; • ancillary activities serving the needs of workers, passengers and visitors to an airport, such as shopping, food and drink outlets and tourism services; • associated training, education and aviation facilities.	The BNE Auto Mall has been located on a site that is not suitable for aviation housing, servicing, maintenance and/or repair. The site is also not suitable for the landing and/or departure of aircraft, or assembly and dispersal of passengers. As such, the BNE Auto Mall provides for activities which will cater for workers, passengers and visitors to the Brisbane Airport. Further, the Project will be designed as a world-class destination and promote tourism in Brisbane and the wider South-East Queensland region. Therefore, the BNE Auto Mall is considered to comply with the overall outcomes for development within the Airport Zone Precinct.

As noted above, the Project site is also identified within the Airport precinct under the Australia TradeCoast Neighbourhood Plan. Land use activities within the Airport precinct under the Australia TradeCoast Neighbourhood Plan are regulated by the BAC Master Plan. As such, refer to Section 3.4 which demonstrates how the Project is consistent with the intended land uses outlined in the Master Plan.

3.6 Airport Development and Building Approvals

3.6.1 Background

In addition to the preparation and approval of a MDP, new development is subject to Airport Lessee Consent from Airport Lessee Company and a Building Approval from the appointed Airport Building Controller (ABC).

The Building Approval cannot be issued by the ABC without written consent from BAC, confirming that the new development is consistent with:

- Brisbane Airport Master Plan;
- Brisbane Airport Environment Strategy;
- Planning objectives for the Airport; and
- An approved MDP.

The EAR and Construction Environmental Management Plan (CEMP) for the site preparatory works was endorsed by the AEO and ABC with Building Approval received in August 2017. A comprehensive assessment of environmental and operational impacts associated with the preparatory works was conducted and mitigation measures were developed and implemented to ensure identified impacts were avoided, minimised and managed. A portion of the preparatory works will continue to be undertaken in parallel with the construction of Stages 1a and 1b (subject of this MDP). As the EAR and CEMP are endorsed documents, they will continue to serve the Project through the preparatory works with the EAR findings informing the background of this MDP.

3.6.2 Relevance to the Project

3.6.2.1 Brisbane Airport Master Plan and Airport Environment Strategy

Section 3.4 summarise the consistency of the Project with the Master Plan and AES respectively.

3.6.2.2 Brisbane Airport Landscape Setting Strategy

The Landscape Setting Strategy is the primary reference document for all landscape initiatives within Brisbane Airport, including the BNE Auto Mall. The Strategy sets a clear overarching 'Statement of Intent', defines the guiding ambition for the landscape of Brisbane Airport and delivers the key objectives defined in the Brisbane Airport Master Plan.

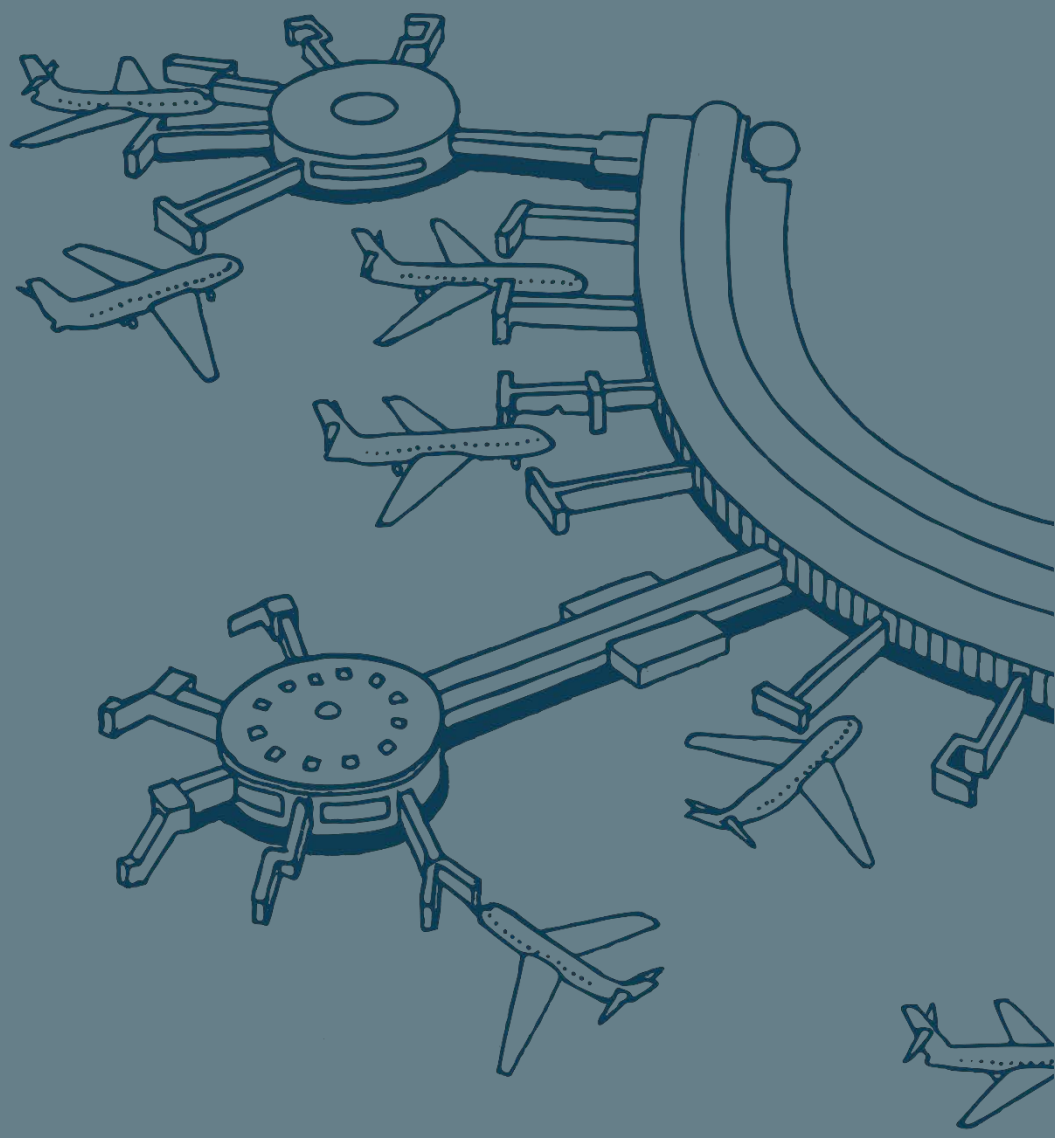
The three goals within the Landscape Setting Strategy, aimed at informing development activity at Brisbane Airport include:

- Provide a functioning ecological system that supports the operational needs of Brisbane Airport;
- Establish a natural green frame for development; and
- Creates memorable landscape experiences that are distinctive of South East Queensland.

3.6.2.3 Airport Technical Guidelines

The Airport Technical Guidelines were prepared by BAC to assist designers, contractors and other specialists involved in preparing design and contract documentation for works on Brisbane Airport. The Airport Technical Guidelines present a number of planning phase requirements to be considered.

During the next phase of the Project, the Designer and Contractor will need to review their works to ensure compliance with the Airport Technical Guidelines.



4

OPERATIONAL AND ENVIRONMENTAL ASSESSMENT METHODOLOGY

4. Operational and Environmental Assessment Methodology

4.1 Assessment Scope

The scope of the assessment includes consideration of the following:

- **Operational factors:**
  - Ground transport.
  - Aviation operations and safety.
  - Other infrastructure and services
- **Environmental and social factors:**
  - Geology, soils and topography.
  - Ecology.
  - Hydrology and water quality.
  - Air quality and odour.
  - Noise.
  - Land use.
  - Landscape.
  - Social and economic issues.
  - Cultural heritage.
  - Waste.
  - Hazardous goods.

Information has also been provided regarding the sustainability considerations for the BNE Auto Mall Project including water, energy and materials.

4.2 Assessment Method

Reference has been made to previous studies at the airport site to inform the description of the baseline environment at the proposed development site. This includes analysis of information from previous MDPs and the literature listed in the following section.

4.2.1 Literature

In addition to other BAC studies referenced in this report, this MDP has been prepared using the following information:

- EPBC Act Protected Matters Search Tool (PMST).
- Queensland Globe for matters related to the *Nature Conservation Act 1992* (Qld) (NC Act), *Water Act 2000* (Qld) (Water Act) and *Fisheries Act 1994* (Qld) (Fisheries Act).
- Queensland Heritage Register.
- Australian Soil Resource Information System (ASRIS).

- Department of Infrastructure, Local Government and Planning (DILGP) DA mapping system.
- State Assessment and Referral Agency (SARA) mapping.
- Department of Agriculture and Fisheries (DAF) fire ant biosecurity zone map dated 1 July 2016.
- Department of Environment and Heritage Protection (DEHP) wildlife online database.
- Department of Aboriginal, Torres Strait Islander and Multicultural Affairs (DATSIMA) cultural heritage database.
- Proposed Brisbane Airport Auto Mall – Environmental Assessment Report (Aurecon 2017);
- Brisbane Auto Mall – Visitation Estimates (Urbis 2016);
- Airport Drive West Precinct Traffic and Transport Study (WSP 2018);
- Airport Design Guidelines and Technical Specifications (BAC 2017);
- BNE Auto Mall Infrastructure Integration Plan (BAC 2018);
- Brisbane Airport Landside Noise Model (SLR 2011);
- Brisbane Airport Development Control Document (BAC 2011);
- Brisbane City Council, Noise Impact Assessment Planning Scheme Policy SC6.21;

A full list of references is provided following Section 8.

4.2.2 Standards and Guidelines

The assessment of impacts and development of mitigation measures in this MDP have been conducted in accordance with the following standards and guidelines:

- Significant Impact Guidelines 1.1 - Matters of National Environmental Significance;
- Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies;
- ISO 31000:2018, Risk management – Guidelines;
- AS/NZS ISO 14001:2016, Environmental management systems;
- AUSTROAD standards and guides;
- Department of Transport and Main Road Specifications;
- Standards Australia 1997, AS 1055.1:1997 – Acoustics – Description and measurement of environmental noise;
- Standards Australia 2010, AS 2436:2010 Guide to noise and vibration control on construction, demolition and maintenance sites;
- Australian Standard 2107:2016 – Acoustics – Recommended design sound levels and reverberation times for building interiors;
- Standards Australia 2015, AS2021:2015 Acoustics – Aircraft Noise – Building Siting and Construction;
- National Airports Safeguarding Framework (NASF) Principles and Guidelines;
- *Guideline: Noise and vibration from blasting* (Department of Environment and Heritage Protection 2016);
- Standards Australia 2004, AS 1940:2004 The storage and handling of flammable and combustible liquids;

- National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amendment 1, 2013) (NEPM 2013);
- National Environment Protection (Ambient Air Quality) Measure 2015;
- Environmental Protection (Water) Policy 2009;
- Environment Protection (Noise) Policy 2007; and
- Environmental Protection (Air) Policy 2008.

4.2.3 Assessment Technique

To assist in the assessment of potential impacts identified in this MDP and to ensure consistency between topics, significance criteria have been defined which follow the generic framework shown in Table 12. The use of significance criteria to assess impacts is a standard technique applied in impact assessments of this nature and is an approach that has been consistently used by BAC in MDP's at Brisbane Airport. BAC has developed the environmental and social-economic significance criteria based on the Australian Standard for risk management (AS/NZS ISO31000-2009) and BAC's experience in managing the Brisbane Airport. This approach enables different topics (i.e. noise and ecology) to be assessed in a consistent manner against the same criteria which are set in an ascending scale of potential impact and ability to mitigate those impacts.

While indicative timing of staging has been provided in Section 2.7, actual development of the BNE Auto Mall will be on an as-needed basis and scheduling of development of individual tenancies will drive the need for upgrades, such as new intersections. This staggered approach has been considered during the impact assessment and mitigation measures prescribe considerations required for detailed design.

Table 12 Environmental and social-economic significance criteria

Significance	Impact classification	Criteria
High	Impact a major problem	Environmental effects are likely to be important considerations at a local scale. If the environmental effects are adverse, they represent potential concerns to the project, depending upon the relative importance attached to the issue during the decision making process. Considerable adverse change to current amenity, lifestyle and everyday community activities. Mitigation measures and detailed design work are unlikely to remove all the effects upon the affected communities or interests. Residual effects would predominate.
Moderate	Impact moderate but liveable for most people	These effects, if adverse, while important at a local scale, are not likely to be key decision making issues. Nevertheless, the cumulative effects of such issues may lead to an increase in the overall effects upon a particular area or on a particular resource. Noticeable adverse change to current amenity, lifestyle and everyday community activities but with scope for mitigation. They represent issues where effects would be experienced but mitigation measures and detailed design work may ameliorate/enhance some of the consequences upon affected communities or interests. Some residual but not significant effects would still arise.
Low	Impact recognisable but acceptable	These effects may be raised as local issues, but are unlikely to be of importance in the decision making process. Nevertheless, they are of relevance in evaluating the subsequent design of the project and consideration of mitigation measures. There may be localised or limited noticeable change to current amenity, lifestyle or everyday community activities.

Significance	Impact classification	Criteria
Negligible	Minimal Change	No effects or those which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

Note: Potential impact categories above can also be categorised as beneficial.

4.3 Assessment Results and Commitments

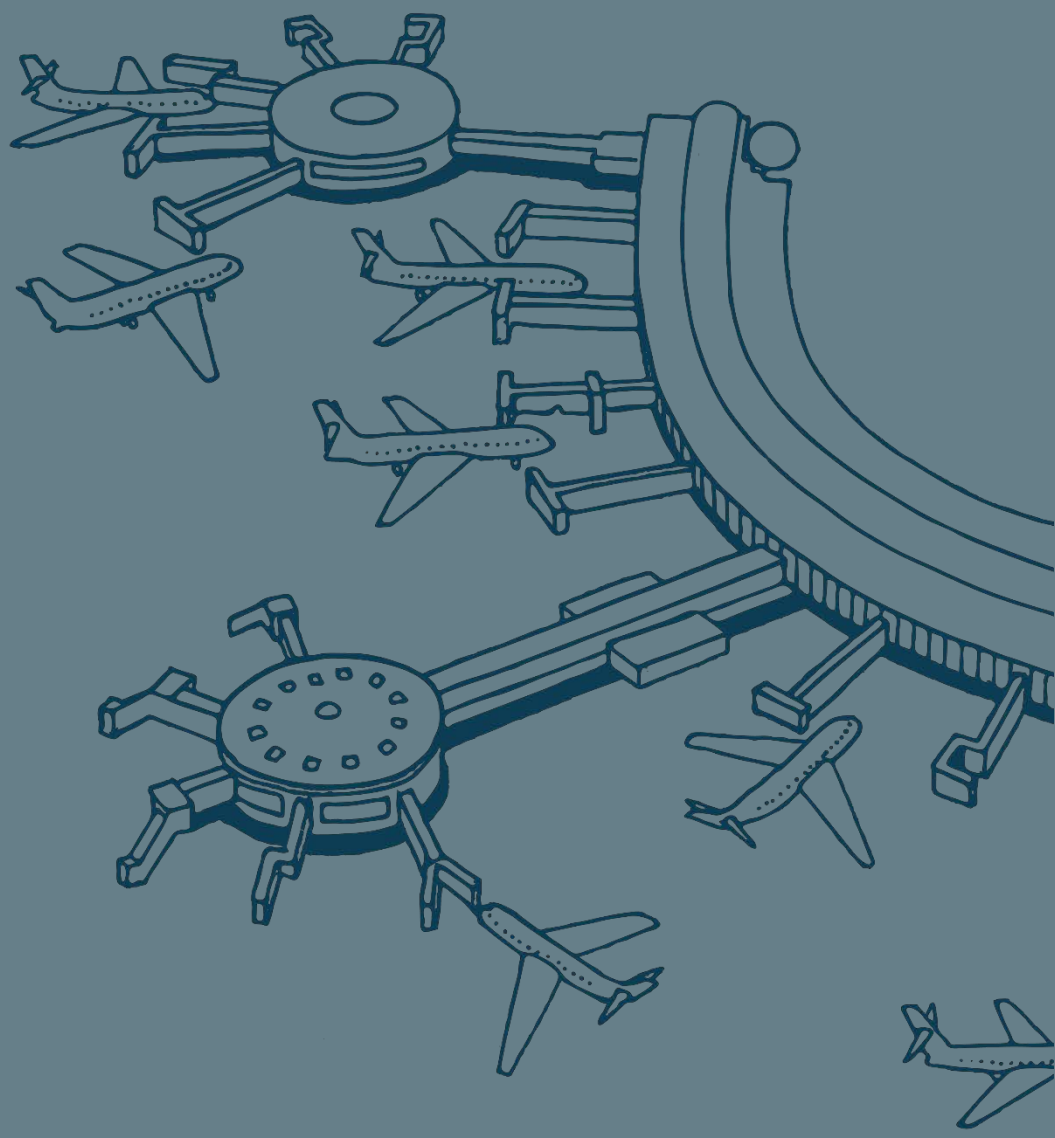
The EAR and CEMP for the site preparatory works (Phase 1) was endorsed by the AEO and ABC with building approval received in August 2017. The existing CEMP included roles and responsibilities and mitigation measures to ensure identified impacts were minimised and managed. Due to the earthworks surcharging program, a portion of the land development works (Phase 1) will continue to be undertaken in parallel with the proposed civil works (subject of this MDP).

Mitigation and management measures identified in this MDP for construction works will be included in an overall CEMP, which will be reviewed and approved by BAC, prior to submission to the AEO. Construction of individual tenancies and precincts of the BNE Auto Mall will be subject to site-specific CEMPs, that comply with this overall CEMP. Preparation and implementation of these site-specific CEMPs will be the responsibility for individual developers and construction contractors but will be BAC's management responsibility.

Each site-specific CEMP will be in place prior to the commencement of construction and all site personnel made aware of its requirements. The site-specific CEMP will detail the following:

- Responsibility for implementing the requirements of the CEMP and for regular site checks to confirm effectiveness;
- Training and inductions for site personnel;
- Mitigation measures including but not limited to those outlined in this MDP;
- Monitoring, if required, during the construction phase. This may include air quality, surface water and groundwater monitoring during the construction period;
- Emergency management procedures;
- Corrective actions in the event that a non-conformance is identified; and
- Reporting requirements, including monitoring results and any non-conformances.

During the operation of the BNE Auto Mall, individual tenants will be responsible for environmental management, monitoring and reporting, which will be conducted in consultation and under supervision by BAC.



5

OPERATIONAL ASSESSMENT

5. Operational assessment

5.1 Ground Transport

5.1.1 Baseline Conditions

The construction and operational phases of the BNE Auto Mall have the potential to generate traffic and transport impacts within and external to the Brisbane Airport. As part of the MDP process, detailed traffic studies have been completed to assess the impact of the BNE Auto Mall and ensure that the Project will meet the requirements of Section 91 of the Airports Act.

An analysis of construction traffic impacts has been derived from the proposed construction program, an estimate of the amounts and types of construction materials to be hauled, vehicles proposed for haulage, the haulage route options and the estimated size of the construction team. A number of these parameters were based on similar developments in Australia, given detailed design of the BNE Auto Mall has not been conducted.

Operational traffic impacts of the BNE Auto Mall have been assessed and a technical memorandum has been provided in Appendix F. This assessment provides:

- A description of the operation of BAC Auto Mall's configuration with the current and future Brisbane Airport transport network;
- Examines the suitability of local access arrangements based upon local traffic modelling; and
- Provides recommendations in respect of parking provision.

Road conditions

The BNE Auto Mall site is bound by Moreton Drive, Airport Drive and Nancy Bird Way and is subject to a high degree of passing traffic on these major roads.

Airport Drive is approximately 5.2 km in length and connects to the Airport Link toll road to the west. The road provides an access route to the Brisbane Domestic and International Terminals. Airport Drive is a four-lane, two-way median divided road and controlled by BAC. Airport Drive is classified as a B-double route road to Southern Cross Way, however the section of road near the Project site is not classified for heavy vehicles.

Moreton Drive travels west to east and is located to the north of the Project site and is the main access route to the Domestic Terminal. The road links to Airport Drive, west of the site. This is a BAC-controlled, four-lane, two-way median divided road. This road provides access to the Domestic Terminal and an alternative route to the International Terminal from the Gateway Motorway via Nancy Bird Way. Part of this road is classified as a multi-combination route.

Nancy Bird Way is an approximately 500 m long road that travels north to south linking Moreton Drive and Airport Drive. The road is located to the east of the project location and is a four-lane, two-way road controlled by BAC. This road provides access to the Brisbane Airport Service centre as well as to the Airpark precinct.

Existing traffic movements

Table 13 and Figure 12 detail the existing traffic volumes on Moreton Drive, Airport Drive and Nancy Bird Way, based on data collected by BAC during their annual traffic survey in 2017.

Table 13 Existing traffic volume summary

Location	AADT (vehicles per day)	Maximum hourly volume (peak hour)	Peak periods
Moreton Drive	60,000	Northbound: 3,200	5am Monday
		Southbound: 2,000	7pm Thursday/Friday
Airport Drive	15,000	Northbound: 500	7am all days
		Southbound: 1,000	7.30am all days, particularly Saturday
Nancy Bird Way	15,000	Eastbound: 850	7am all days
		Westbound: 300	7.30am all days, particularly Saturday

Development of the BNE Auto Mall has been occurring since September 2017 and to date has involved clearing, bulk earthworks and ground improvements. Current site access arrangements from Airport Drive and Nancy Bird Way will remain the likely access points to the Project site during construction of Stages 1 and 2. The EAR endorsed for the site preparatory works phase (refer Appendix D) estimated approximately 97 return trips for construction traffic, across a 12 hour working day for Stages 1 and 2 combined (roughly eight additional vehicles in peak hour), which will be completed prior to the commencement of this work. For Stage 3 of the site preparatory works, there will be approximately 74 return trips for construction traffic, across a 12 hour working day (roughly six additional vehicles in peak hour). The current project schedule has the potential for construction of the BNE Auto Mall (subject of this MDP) to overlap with Stage 3 of the site preparatory works for approximately a six month period.

The closest public transport stop available for the Project is the Airtrain Station at the International Terminal, approximately 500 m from the BNE Auto Mall. Services depart the Airtrain Station every 15 minutes during peak hour and every 30 minutes on weekends, public holidays and during the off peak period of weekdays.

There are no TransLink bus services near the BNE Auto Mall, however a number of buses managed by BAC, including the T-Bus, T-Bus Express, AirPark Bus and the S-Bus, service the International Terminal. The T-Bus and T-Bus Express connect the Domestic Terminal, International Terminal and Skygate. The S-Bus is a staff bus that services both international and domestic terminals and connects them to the staff car parking areas.

There is a designated bicycle route from the Kedron Brook Bikeway to the International Terminal Building via Charlie Earp Bridge, Lakeside Drive and Qantas Drive. An existing footpath connects the International Terminal to the Australian Federal Police Building, as well as between the International Terminal and the Kingsford Smith Memorial and Brisbane Airport Services Centre for both pedestrians and cyclists.

Figure 13 details the location of the public and active transport surrounding the BNE Auto Mall.

Other modes of transport that service the Brisbane Airport include taxis, ride sharing services (e.g. Uber), coaches and limousines. The nearest taxi rank is located at the northern end of Arrivals (Level 2) at the International Terminal. There is also a designated ride-sharing service pick up zone in this area.

In accordance with the Brisbane Airport Master Plan, BAC will maintain the flexibility to develop a mass transit system and connections within the Auto Mall precinct.

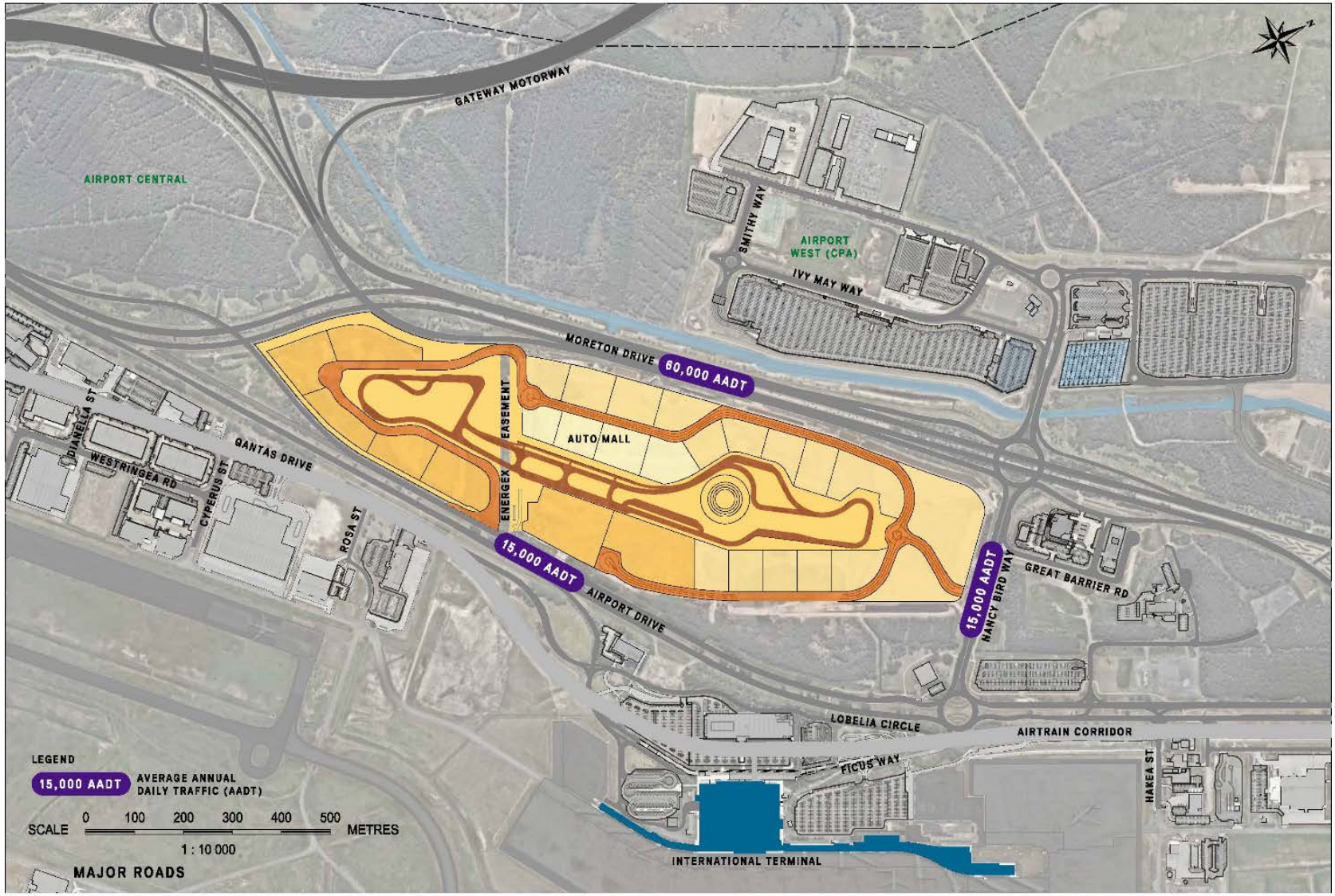


Figure 12 Major roads surrounding the Project site

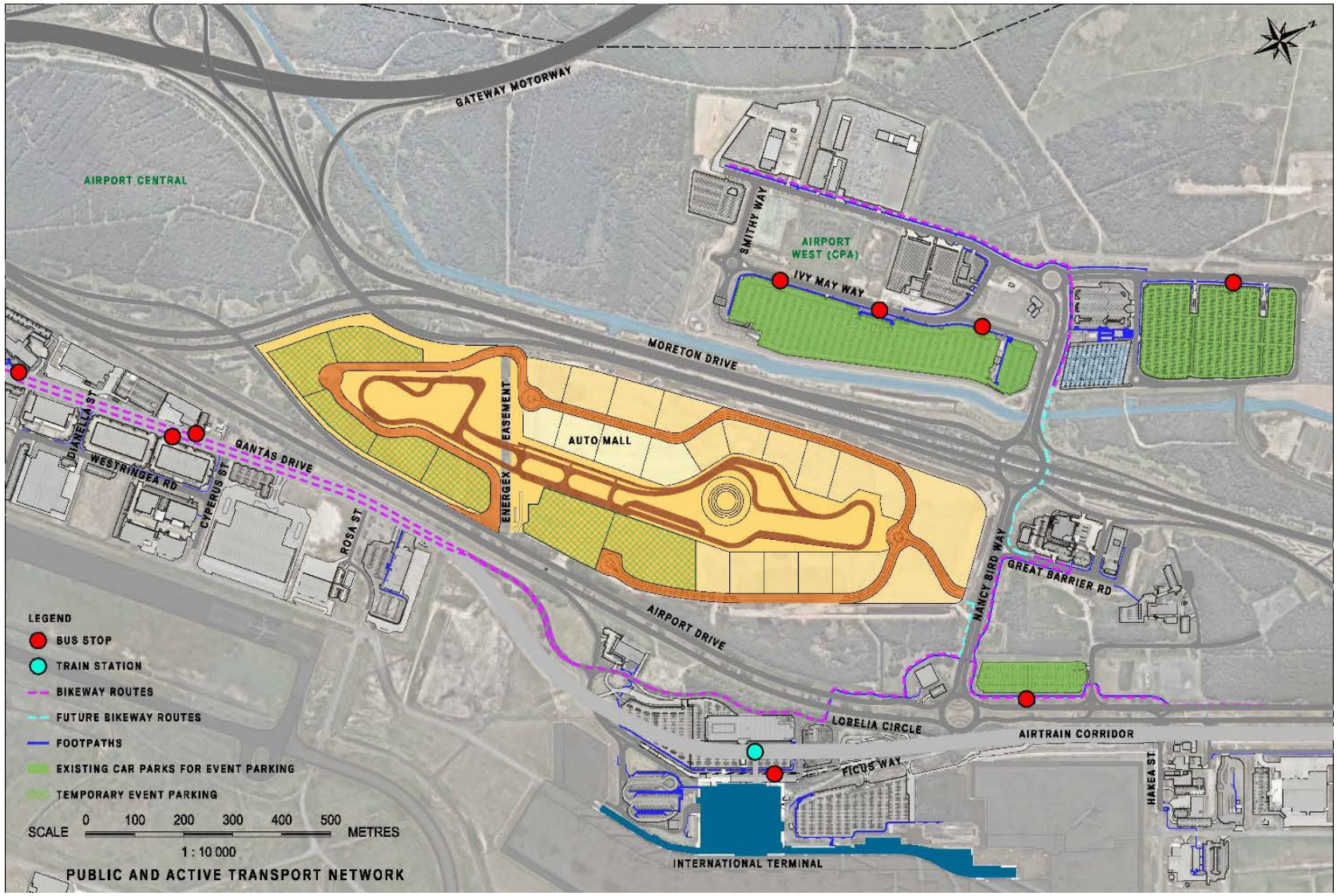


Figure 13 Public and active transport network at Brisbane Airport

5.1.2 Assessment of Impacts

5.1.2.1 Construction

A Construction Traffic Assessment is provided in Appendix E and is summarised below.

5.1.2.1.1 Proposed Vehicular Access Arrangements

The access points during construction to the Project site are likely to be obtained from both Airport Drive and Nancy Bird Way.

During construction of Stages 1a and 1b, access to the Project site will continue to be obtained from Airport Drive (left-in, left-out) and Nancy Bird Way (left-in). A permanent connection to the site will also be made from Nancy Bird Way in late 2020, which will be a left-in, left-out and right turn in. The optimal truck entry point on Nancy Bird Way is located at the road's midpoint, which would provide approximately 200 m upstream and 200 m downstream length.

Construction traffic access during Stage 2 will predominately be through Airport Drive (left-in, left-out), south of the Energex Easement while during Stage 3, access will be through both the new intersections on Airport Drive and Nancy Bird Way and the construction access on Airport Drive, north of the Energex Easement. It should be noted that the intersection for the International P2 Multi-Level Car Park (MLCP) on Airport Drive will be signalised and is planned to be commissioned in mid to late 2020.

The detailed permanent concept layouts of the access arrangements for Airport Drive and Nancy Bird Way are provided in Figure 14 and Figure 15 respectively.

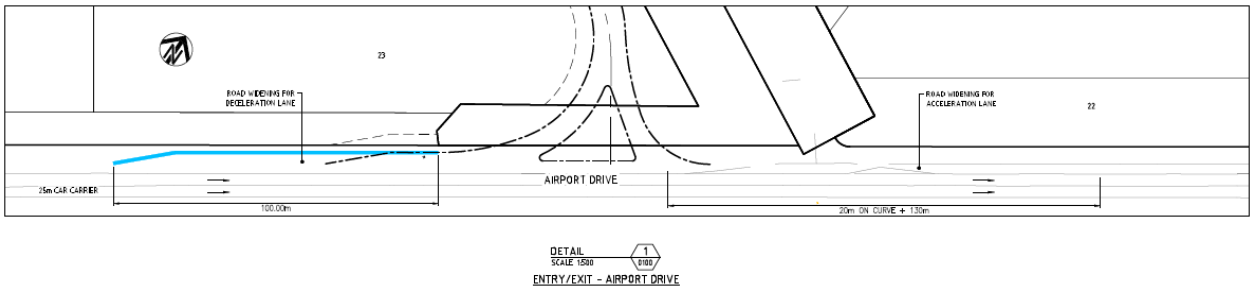


Figure 14 Access arrangements from Airport drive

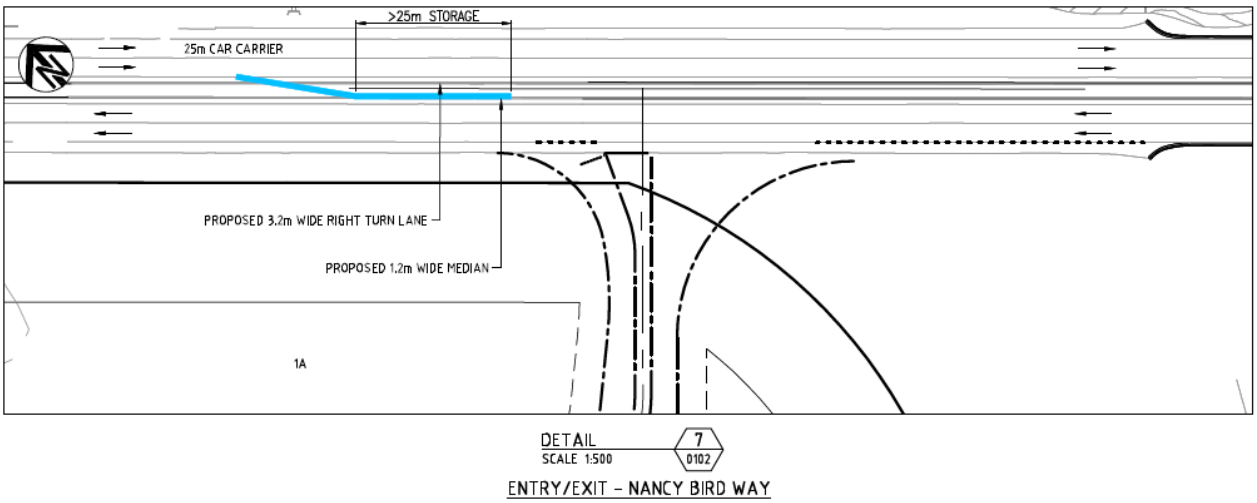


Figure 15 Access arrangements from Nancy Bird Way

5.1.2.1.2 Trip Generation

Construction activities will generate traffic relating to construction worker movements for the performance track and the individual tenancies as well as transport of concrete and building materials and equipment.

For construction concrete and other building material transportation, a conservative estimate of eight trips per day per hour (laden and unladen trips to and from the BNE Auto Mall) has been calculated as well as 150 construction worker trips each working day.

It is anticipated that construction compounds associated with the development will be located within the BNE Auto Mall site. The Project will potentially involve approximately 270 workers for construction of the performance track and control centre as well as potentially 150 construction workers for each stage of construction (based on knowledge of similar developments). Construction workers are expected to commute to and from the site during morning and evening peak periods from Monday to Saturday and are likely to be travelling to the site by private vehicles across all stages of the development. Construction worker traffic movements may also occur outside of the commuter peak periods due to possible flexible working arrangements.

The expected traffic generation during construction is not anticipated to substantially increase peak hour (AM/PM) traffic on Moreton Drive and Nancy Bird Way. There may be a minor increase in peak hour (AM/PM) traffic on Airport Drive, with an increase of 7.8% for northbound traffic. It is noted that current traffic volumes northbound on Airport Drive are much lower than Moreton Drive and similar to Nancy Bird Way.

5.1.2.1.3 Trip Distribution

All of the construction-related trip generation is assumed to be from the north, west and south directions as the main airport operations are situated to the east of the BNE Auto Mall site. It is also assumed that construction traffic from the north and south will most likely be using the Gateway Motorway or Southern Cross Way as primary options.

The current construction access arrangement from Airport Drive is illustrated in Figure 16 below.

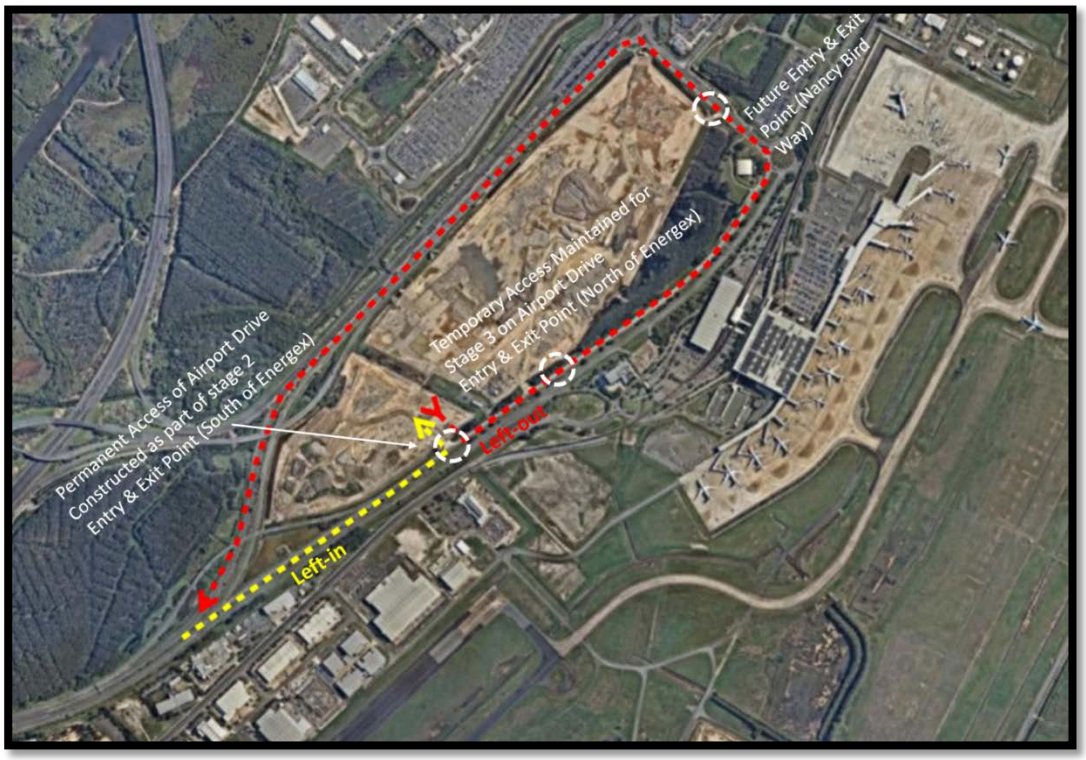


Figure 16 Current construction access arrangement from Airport Drive

Possible construction routes via Nancy Bird Way are illustrated in Figure 17 and Figure 18 below.

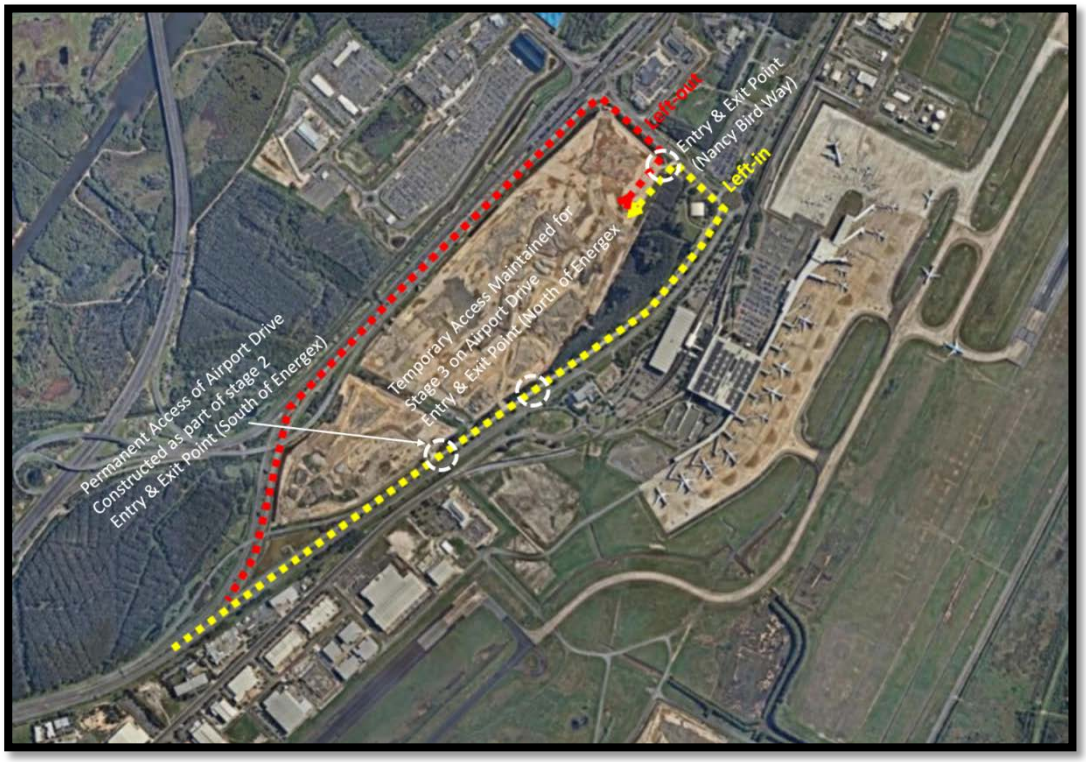


Figure 17 Construction routes from north and south accessing the site from Nancy Bird Way (left-in, left-out)

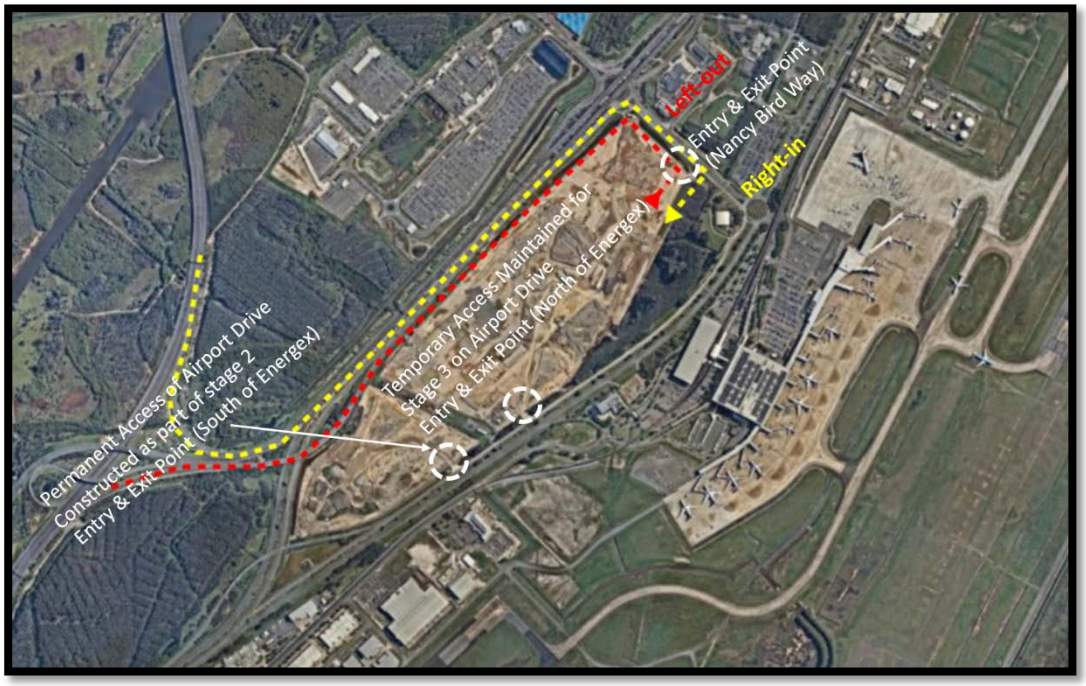


Figure 18 Construction routes from west accessing the site from Nancy Bird Way

The route assessment determined potential points of conflict at the site access point on Nancy Bird Way, with respect to increased delays due to turning vehicles.

5.1.2.1.4 Impacts on the Surrounding Road Network

A crash analysis review of the previous ten years for the surrounding road network of the Project site has been completed to determine if the Project would affect the existing crash risk. There were no fatal crashes recorded on the surrounding road network and given the relatively small number of construction vehicles, traffic generated from the BNE Auto Mall development will have a negligible impact on the existing crash risk.

In addition, the Airport Drive/Nancy Bird Way roundabout may have some minor impacts during peak hours due to the introduction of heavy vehicles during construction works.

5.1.2.2 Operation

5.1.2.2.1 Access and Internal Road Layout

The initial public access point to the BNE Auto Mall will be via Nancy Bird Way and will be commissioned in late 2020. The access arrangement for Nancy Bird Way will be left in, left out with a short right turn in access from Nancy Bird Way (refer Figure 15).

The second public access point to the BNE Auto Mall will be via Airport Drive and will be left in, left out as per Figure 14 and will be used for operational traffic from Stage 2.

It is expected that traffic generated from the operation of the BNE Auto Mall will be distributed evenly between Moreton Drive and Airport Drive. Access to the BNE Auto Mall via either the Nancy Bird entrance or the Airport Drive entrance will depend on the origin of the trip (e.g. north, south, west or the Brisbane Airport). Traffic originating from Skygate or the Brisbane Airport will likely access the BNE Auto Mall from Airport Drive, while traffic originating from northern suburbs will likely access the BNE Auto Mall from Moreton Drive. Traffic originating in Brisbane City will be split between Moreton Drive and Airport Drive and will be dependent on signage.

The Project will include an internal road that provides access to future tenancies within the BNE Auto Mall. The design of the internal layout is to be in accordance with BAC's Engineering Technical Guidelines and relevant standards including AUSTROAD Standards and the Department of Transport and Main Road Standards.

5.1.2.2.2 Service facilities and public transport

The Project will be serviced on-street by an Articulated Vehicle (AV), as per the provisions of the *Transport, Access, Parking and Servicing* (TAPS) *Planning Scheme Policy* (PSP). The internal roads will be designed to accommodate a heavy rigid vehicle (HRV) and an internal road width to accommodate loading bays on road that still provide adequate room for passing vehicles. There will be time of day restrictions in place for service vehicle access to ensure no servicing occurs during weekday peak hours (5am to 10am and 3pm to 6pm) and weekend peak hours (depending on hours of performance track operations).

For on-site servicing, future tenants will be required to provide a swept path assessment for the truck access route, loading area movements, and driveway use. Where on-site servicing is to occur, sufficient space will be provided for safe manoeuvring of other vehicles on the road corridor. Service vehicle movements will be dependent on the individual tenancy and frequency of deliveries to that tenancy.

A swept path analysis was conducted for a range of vehicles that may frequent the BNE Auto Mall (i.e. car carriers, buses, service vehicles). The internal road network will include indented bays to facilitate public transport. The indented bays may also be used for loading and unloading of car carriers at a time that does not impact public transport operations or other movements within BNE Auto Mall.

5.1.2.2.3 Proposed Parking Arrangements

Due to the car-based nature of the BNE Auto Mall, cars are anticipated to be the primary mode of travel for staff and visitors to the BNE Auto Mall. It is assumed that mode of travel will be broken down as:

- Private vehicle (73%)
- Commercial vehicle (18%)
- Public transport (9%)
- Active transport (<1%)

All tenants will be required to supply sufficient parking on their site. The adopted car park rates for the Auto Mall are **0.75 car parking spaces per 100 m^2 of lot area**. The spaces subject to this ratio will accommodate parking for visitors and staff only. Spaces used for operations (i.e. display areas, servicing, repairing, detailing, reconditioning etc.), will be considered separately, but will not encroach on or compromise the spaces that have been dedicated for visitors and staff.

Further details on proposed car parking are provided in Appendix F. Event parking for special events can be accommodated offsite at the Central Parking Area and Banksia Place and temporary locations as illustrated in Figure 13. It should be noted that the scheduling of special and major events will consider existing car parking requirements to ensure airport operations are not adversely impacted.

5.1.2.2.4 Active Transport

The Project will support cyclists and pedestrians travelling to and from the BNE Auto Mall.

Given the distance from nearby residential areas, pedestrian access to the BNE Auto Mall is most likely to be to and from public transport stations and stops. Pedestrian movement will be supported within the BNE Auto Mall by a network of pedestrian pathways, that will be aligned to the internal road network and provide access between adjacent businesses within the precinct as illustrated in Figure 13.

While the BNE Auto Mall will be a car-focused development, traffic growth will be minimised, where possible, by creating an environment where pedestrians and cyclists are prioritised using measures such as constructing safe pedestrian crossing areas at key locations within the Project site. Priority pedestrian crossings may be used as a measure to restrict traffic speeds and improve the level of service for active travel within the BNE Auto Mall.

5.1.2.2.5 Trip Generation

Table 14 summarises the estimated traffic generation for each of the likely land uses (‘car dealerships’ and ‘business parks’) within the BNE Auto Mall, including peak hour trip generation. The figures are based on the Department of Transport and Main Roads, NSW Transport Roads and Maritime Services and Institute of Transportation Engineers (refer Appendix F).

Table 14 Trip generation (total vehicles)

STAGE	AM Peak (8AM-9PM)	PM Peak (4PM-5PM)	Daily	Daily Trips/100m2 GFA	Weekend (11AM-12PM)
Stage 1	308	323	3,027	5.83	210
Stage 2	404	424	3,963	5.83	270
Stage 3	82	86	809	5.83	50
Total	**794**	**833**	**7,799**	**N/A**	**530**

Based on the above trip generation analysis, the total number of car trips expected to be generated by the proposed site is approximately 7,799, including sales staff, servicing staff, sales visitors, car servicing visitors and other operational activities. It is worth noting that staff members are also likely to arrive before visitors start coming and leave after visitors have departed. Thus, these trips are unlikely to add to the peak hour trips.

A SIDRA analysis was conducted on the two access points to the BNE Auto Mall (Airport Drive and Nancy Bird Way) and concluded there would be no discernible impact on these access points from operational traffic based on degree of saturation, average delay and queuing distance.

5.1.2.2.6 Special and major events

The BNE Auto Mall will hold special and major events at the performance track at a frequency of approximately two events per year. Transport for events generally have larger peak movements and specific requirements for bus layover and staging, mass pedestrian ingress/egress, storage areas, security facility provisions and temporary traffic management. Prior to an event, an event-specific Traffic Management Plan will be prepared to ensure that any impacts on the internal or external road networks are manageable, as per the Event Management Plan provided in Appendix B.

Event parking can be accommodated offsite at the Central Parking Area and Banksia Place and temporary locations as illustrated Figure 13.

5.1.3 Mitigation Measures

5.1.3.1 Construction

To minimise possible impacts on existing surrounding businesses during construction, temporary construction, pedestrian, vehicle access and parking arrangements will be planned and signed accordingly.

Affected intersections, including those providing site access, will be developed and upgraded to accommodate traffic demands and background influences. The permanent connection to the external road network via Nancy Bird Way will be constructed in late 2020 to allow for uninterrupted operation of the BNE Auto Mall to commence while construction of Stages 2 and 3 continue.

Other measures to reduce impacts from traffic generation include:

- Each tenancy will be required to develop a Traffic Management Plan for construction works, which will be approved by BAC prior to development of that tenancy commencing. Construction haulage routes and traffic management requirements will be included in the Traffic Management Plan;
- It is expected that construction staff will arrive on site in their own private vehicles. All construction vehicles will park within designated temporary parking areas the Project site, which will be outlined in the Traffic Management Plan for each tenancy;
- Staggering start and finish times for construction workers to avoid peak hour traffic; and
- Planning of preferred construction haulage routes and traffic management requirements in consultation with the tenant and construction contractor.

With the implementation of management and mitigation measures, potential traffic impacts associated with construction activities will be **negligible**.

5.1.3.2 Operation

Further discussions with prospective tenants will be undertaken to establish a suitable mix of staff and visitor parking on site or a different precinct within Brisbane Airport. Specific lot layouts detailing car parking spaces, aisle and circulation road dimensions will be developed at the detailed design stages of the BNE Auto Mall and will be in accordance with the adopted car park rates.

To allow the safe movement of service vehicles within the BNE Auto Mall, time restrictions are proposed to ensure peak hours of operation are avoided. In addition, for any on-site servicing, future tenants will be required to provide a swept path assessment for the truck access route, loading area movements, and driveway use.

In relation to bus movements, indented bus stops are proposed for use by service vehicles to allow the safe manoeuvring of other vehicles within the road corridor. These indented bus stops can be used as bus stops within operational hours of the BNE Auto Mall

Active transport infrastructure will connect cyclists and pedestrians travelling to and from the BNE Auto Mall, connecting existing cycle routes, car parking (e.g. the Central Parking Area) and the International and Domestic Terminals. Priority pedestrian crossings may be considered to reduce traffic speeds and allow safe pedestrian crossing proximal to bus stops on internal access roads.

For special and major event days, an event-specific Traffic Management Plan will be prepared to ensure that any impacts on the internal or external road networks are manageable, as per the Event Management Plan provided in Appendix B.

With the implementation of management and mitigation measures, potential traffic impacts associated with operation of the Auto Mall will be **low**.

5.2 Aviation Operations and Safety

In accordance with the requirements of Section 91 of the Airports Act, an assessment of the Project's potential to affect flight paths and aviation operations and safety has been conducted.

Prescribed Airspace, Airservices Communications, Navigation, Surveillance and Air Traffic Control operations, vertical plume rises, lighting, reflections and wind shear have been assessed across the Project site and no adverse impacts to aviation operations and safety have been identified.

The Project has been assessed against the National Airports Safeguarding Framework (NASF) with the outcomes described in Table 15.

Table 15 Assessment against NASF Guidelines

NASF Guideline	Comment
Guideline A: Measures for Managing Impacts of Aircraft Noise	Applicable Aircraft noise is discussed in Section 5.2.7 and in Section 6.5
Guideline B: Managing the Risk of Building Generated Windshear and Turbulence at Airports	Applicable Windshear and turbulence are discussed in Section 5.2.3
Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports	Applicable Wildlife strikes are discussed in Section 6.7
Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation	Not applicable The Project is not a wind turbine farm
Guideline E: Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports	Applicable Distraction from lighting and/or reflection are discussed in Section 5.2.6
Guideline F: Managing the Risk of Intrusions into the Protected Airspace of Airports	Applicable Protected Airspace for operation and construction are discussed in Sections 5.2.1 and 5.2.2 respectively

NASF Guideline	Comment
Guideline G: Protecting Aviation Facilities — Communications, Navigation and Surveillance (CNS)	Applicable CNS and Air Traffic Control are discussed in Section 5.2.4
Guideline H: Protecting Strategically Important Helicopter Landing Sites	Not applicable The Project is not located within a helicopter landing site
Guideline I: Managing the Risk in Public Safety Areas at the Ends of Runways	Not applicable The Project is not located within the public safety areas at Brisbane Airport

5.2.1 Prescribed Airspace – Operation of the BNE Auto Mall

A review of potential impacts to the prescribed airspace has been undertaken utilising the Brisbane Airport Prescribed Airspace for Brisbane's New Runway operations reviewed against development heights to confirm acceptability.

Prescribed airspace is the airspace above any part of any prescribed surface such as:

- Obstacle Limitation Surface (OLS) (refer Figure 20);
- Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) (refer Figure 21); and
- Navigational aid (NAVAID) protection surface (refer Figure 22).

The three prescribed airspace elements above are published by BAC individually and combine multiple surfaces to illustrate the critical surface for each element.

The OLS is designed to provide protection for aircraft operating under visual flight rules (VFR) when the pilot is flying by sight and is usually the most critical of all surfaces. The OLS surface elevation varies across the BNE Auto Mall site with three different surfaces, of which the lowest elevation at 35 m AHD and highest elevation 47.5 m AHD, as illustrated in Figure 20. Buildings within the BNE Auto Mall site are unlikely to exceed these heights and as such, will not impact the critical protection surfaces. However, any buildings designed above the OLS surface elevation will be subject to BAC review and approval with reference to prescribed airspace.

The assessment of the critical surfaces for PANS-OPS and NAVAID indicate elevations of between 42 m AHD and 66.7 m AHD, well above those of the OLS surfaces. Diagrammatic assessments of the PANS-OPS and NAVAID surfaces are detailed in Figure 21 and Figure 22 respectively.

5.2.2 Prescribed Airspace - Construction of the BNE Auto Mall

The construction of the BNE Auto Mall site is not anticipated to cause aviation operational and safety impacts due to both the location and the type of construction activities planned. BAC will continually monitor construction activities to ensure there is negligible impacts across airport operations.

Should cranes be required during construction which penetrate any of the above prescribed airspace elements, approvals and clearances will be sought prior to construction commencing as required by BAC with close engagement with the Department of Infrastructure, Transport, Regional Development and Communications, CASA and Airservices regarding cranes operating on Brisbane Airport land.

5.2.3 Wind shear

The potential impact of wind shear from the BNE Auto Mall site upon aircraft operations was assessed utilising Guideline B of the National Airports Safeguarding Framework (NASF) (Department of Infrastructure, Regional Development and Cities 2018a). Figure 23 illustrates that a small portion of development site is located within the wind shear assessment zone for the existing runway. Based on the 1:35 rule in NASF Guideline B, the assessment zone has a surface elevation rising from 34.7 m AHD to 39.0 m AHD as it reaches the BNE Auto Mall development area. That is, any development within this assessment zone that extends above 34.7 m AHD will be subject to a wind shear assessment. However, as described in Section 2.4, no buildings are proposed over 12 m in height and as such, are well below the height requiring a wind shear assessment.

The proposed land use within the BNE Auto Mall site is sport and recreation and mixed use commercial and the proposed buildings are unlikely to intersect this wind shear assessment surface. As such, no further investigation is required on the potential effects of building induced wind shear impacts to aircraft operations.

5.2.4 Communication, Navigation and Surveillance and Air Traffic Control

The impact to navigation aid protection surface within the prescribed airspace at Brisbane Airport has been assessed against NASF Guideline G. These existing and future surfaces ensure appropriate protections are in place for ground based CNS equipment operated by Airservices Australia and BAC.

Figure 19 provides a line of sight profile from the air traffic control (ATC) tower to the ground at the end of the taxiway (refer Figure 24 for the direction of the line of sight). As illustrated in Figure 24, the line of sight from the ATC tower falls across the Stage 2 area (eastern side) of the development site. Proposed buildings to be developed within this line of sight are up to 12 m in height and as such, will not exceed the 30.38 m AHD height limitation derived in Figure 19.

The review of the prescribed airspace for navigation aids determined the BNE Auto Mall would have no impacts to the protected surfaces for existing or future operations. As part of the close cooperation between BAC and Airservices Australia, BAC will continue to liaise with Airservices on operational issues and ensure there will be no disruption to existing or future CNS equipment, NAVAID protection surfaces and the continuous line of sight for air traffic controllers to arrival or departing aircraft.

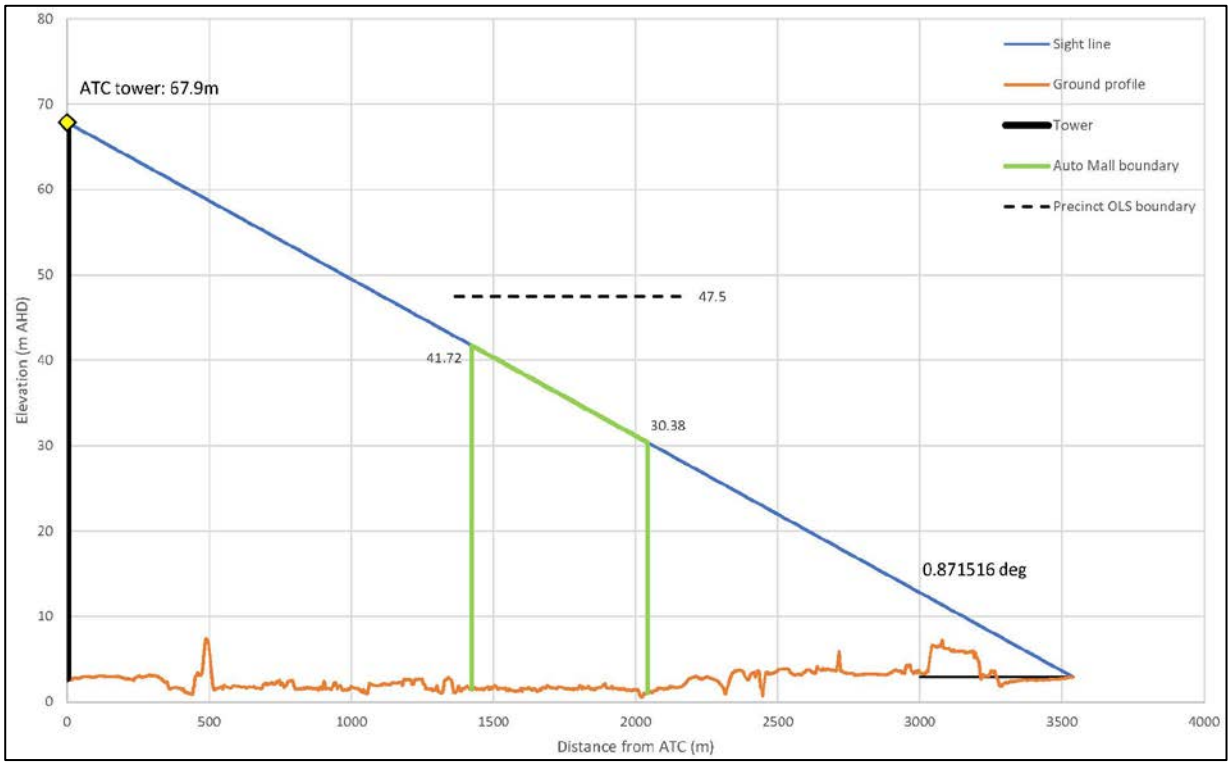


Figure 19 Line of sight profile

5.2.5 Vertical Gas Plume Rise and Dust

Vertical gas plumes can originate from any number of sources where facilities produce emissions and exhaust gases through stacks or vents creating plumes of gases at varying velocities which can affect aircraft operations in flight.

The land use and concept of the BNE Auto Mall site does not propose any facilities which would produce such vertical exhaust gases. However, if advised by CASA, BAC can undertake a vertical plume assessment for any specific building on the BNE Auto Mall site in close consultation with CASA.

Dust suppression activities will be undertaken throughout construction to maintain line of sight and visibility for aircraft and air traffic controllers.

5.2.6 Distraction from Lighting or Reflection

Light emissions in close proximity to runway approaches are a potential cause for concern to the safe operation of landing aircraft with regard to:

- Pilots being dazzled by bright lights momentarily;
- Similar light patterns which may be confused with approach and runway lighting particularly for pilots unfamiliar with the airport; and
- Lighting that may reduce the night vision of air traffic controllers.

Lighting and reflection at the BNE Auto Mall development was assessed by utilising the NASF Guideline E '*Managing the risk of distraction to pilots from lighting in the vicinity of airports'*, which lists stadium floodlighting and motorway/freeway lighting as examples of significant lighting (Department of Infrastructure, Regional Development and Cities 2018b).

The BNE Auto Mall development sits within three of the four lighting control zones (Zone B, C, D) outlined within the NASF guideline associated with the location of Brisbane's New Runway. These lighting control zones indicate the maximum allowable candela (measure of light intensity) at 3° above the horizontal plane. The majority of the BNE Auto Mall site sits within Zone C (maximum of 150 cd light intensity) and Zone D (maximum of 450 cd light intensity), as illustrated in Figure 25.

The floodlighting for the performance tracks will likely be in accordance with *Federation Internationale de L'Automobile (FIA) Performance Specification 2010* in relation to uniformity and even spread of light. All other external lighting within the BNE Auto Mall site will be installed in accordance with Australian Standards. All lighting within the BNE Auto Mall will be subject to the CASA Aerodrome Regulation 94 of the *Civil Aviation Safety Regulations 1998*, which overrides all other standards. Lighting options and arrangements will be further explored during detailed design by an experienced lighting designer. Detailed design will also consider any large digital advertising that may be used during special events.

The proposed lighting designs identified within the lighting control zones across the site will be discussed with Airservices Australia to satisfy safe operations for both aircraft and air traffic control. Consultation with CASA will also be undertaken to ensure lighting does not infringe upon the provisions within the *Civil Aviation Safety Regulations 1998*.

The external surface finishings of buildings and structures within the site will also be subject to consultation with Airservices Australia and CASA to ensure there is no reflected sun-glare affecting the operations for aircraft or air traffic controllers.

5.2.7 Aircraft Noise – Australian Noise Exposure Forecast

The BNE Auto Mall site can be described as a commercial and light industrial land use when relating the site to the Australian Standard *AS2021-2015 – Aircraft Noise Intrusion*. The proposed BNE Auto Mall site, which sits within both the ANEF 20-25 and ANEF 25-30 noise contours produced by BAC (refer Figure 26), is therefore considered an acceptable use in line with other commercial developments on Brisbane Airport land with respect to the effects of aircraft noise, in accordance with NASF Guideline A.

5.2.8 Mitigation measures

Building height restrictions vary across the development and are driven by Brisbane's New Runway OLS and potential windshear from existing runway operations, as discussed in the sections above. While buildings within the BNE Auto Mall site are unlikely to exceed these heights, any buildings designed above these critical protection surfaces will be subject to BAC review and approval with reference to prescribed airspace.

The BNE Auto Mall development sits within three of the four lighting control zones (Zone B, C, D) outlined within the NASF guideline associated with the location of Brisbane's New Runway. The floodlighting for the performance tracks will likely be in accordance with *Federation Internationale de L'Automobile (FIA) Performance Specification 2010* and all other external lighting within the BNE Auto Mall site will be installed in accordance with Australian Standards. However, these standards are superseded by the CASA Aerodrome Regulation 94 of the *Civil Aviation Safety Regulations 1998*, against which all lighting within the BNE Auto Mall will comply. Lighting options and arrangements, as well as any large digital advertising, will be investigated during detailed design by an experienced lighting designer.

Other mitigation measures related to aviation operations and safety:

- BAC will continue to liaise with Airservices to ensure there will be no disruption to existing or future CNS equipment, NAVAID protection surfaces and the continuous line of sight for air traffic controllers to arrival or departing aircraft.
- If advised by CASA, BAC can undertake a vertical plume assessment for any specific building on the BNE Auto Mall site in close consultation with CASA.
- Dust suppression activities will be undertaken throughout construction to maintain line of sight and visibility for aircraft and air traffic controllers.

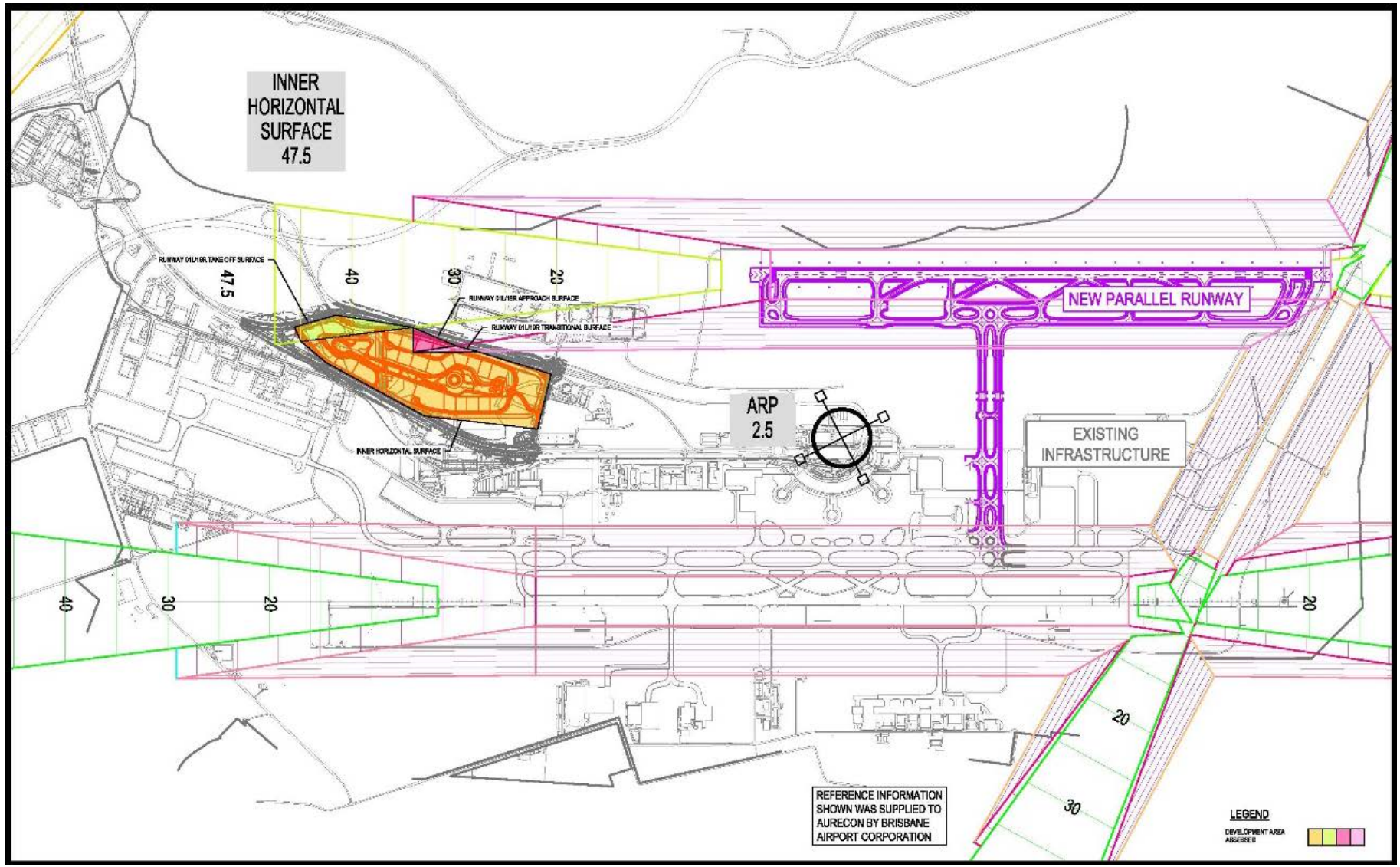


Figure 20 Obstacle Limitation Surfaces

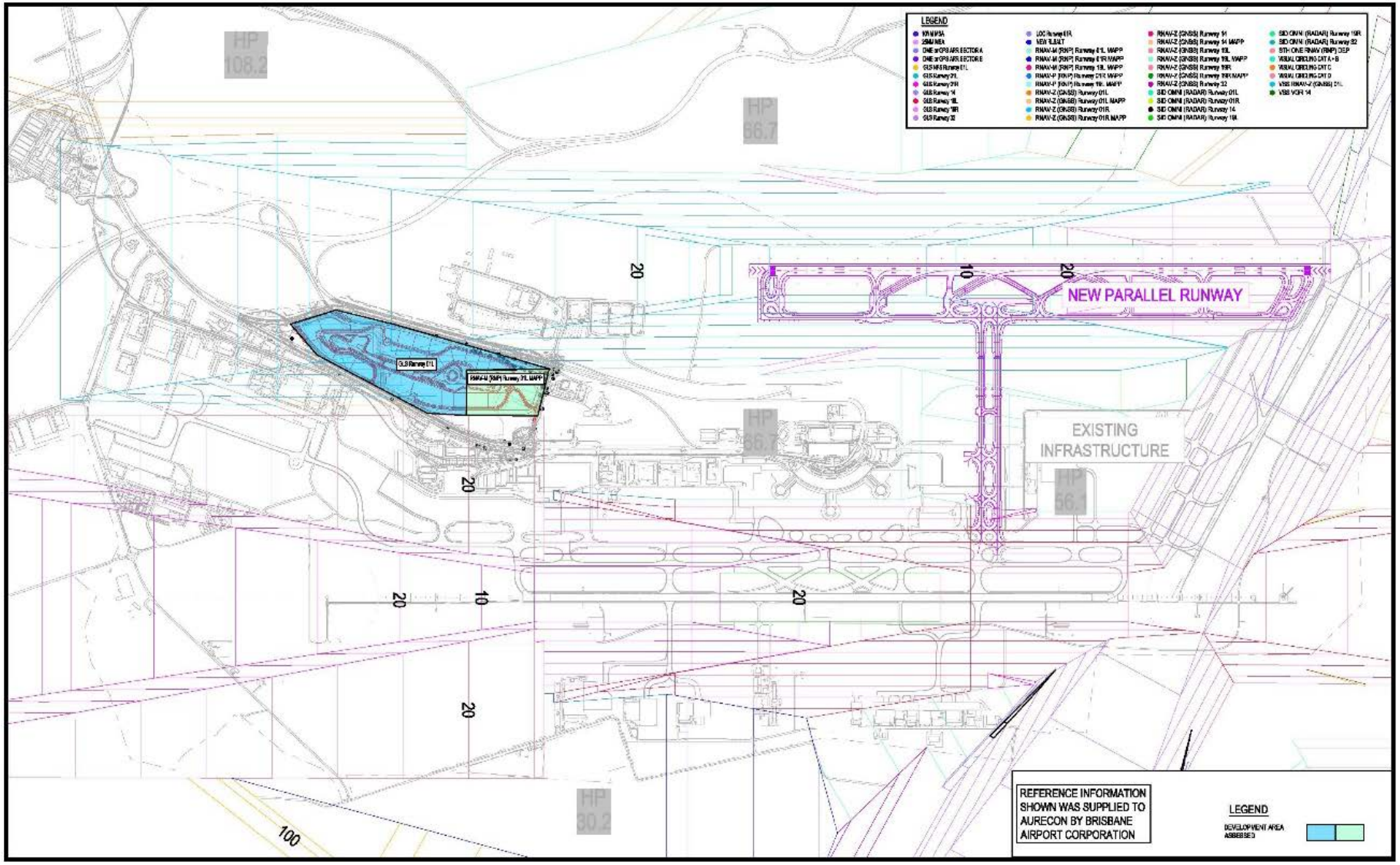


Figure 21 PANS-OPS

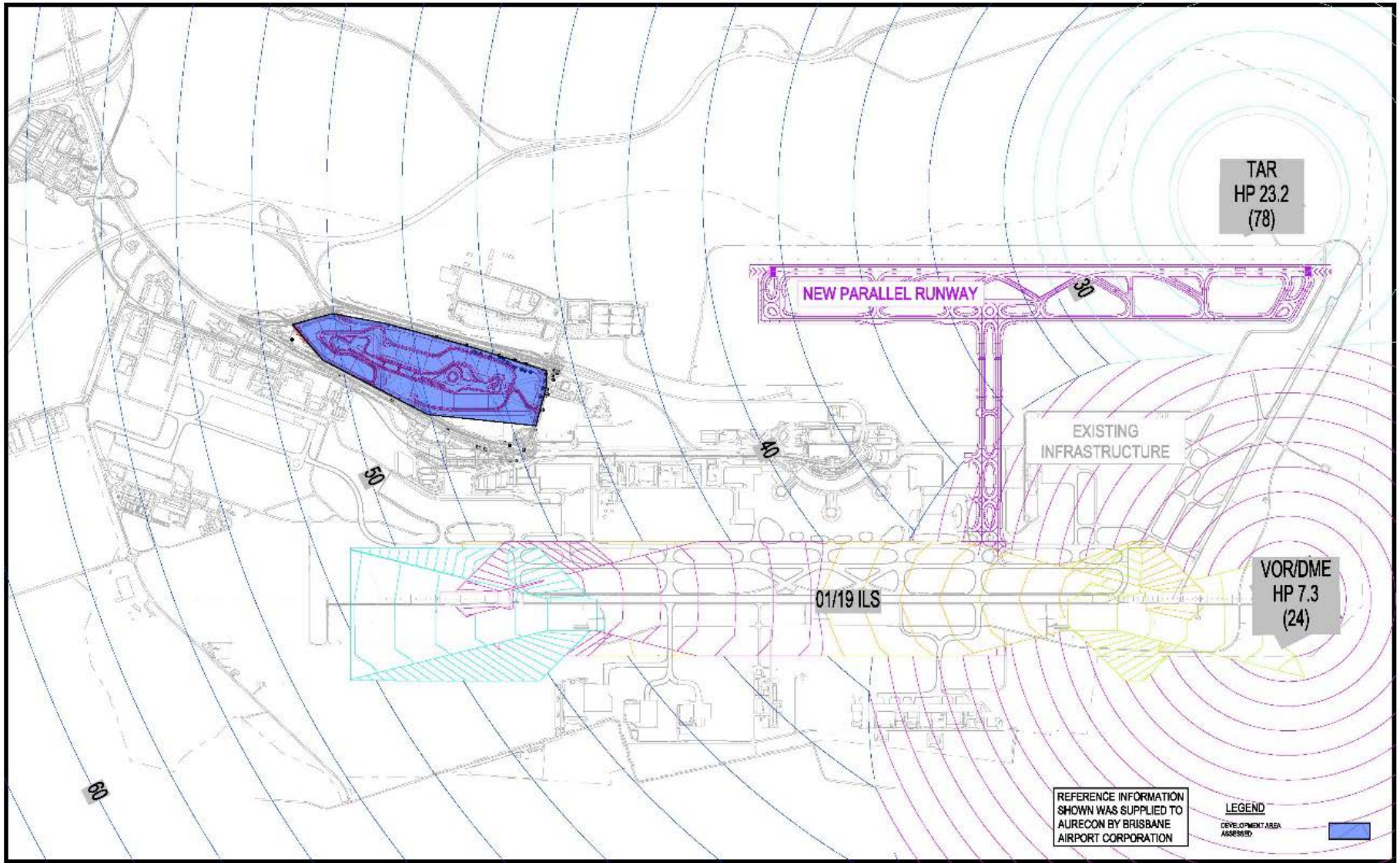


Figure 22 NAVAID Surfaces

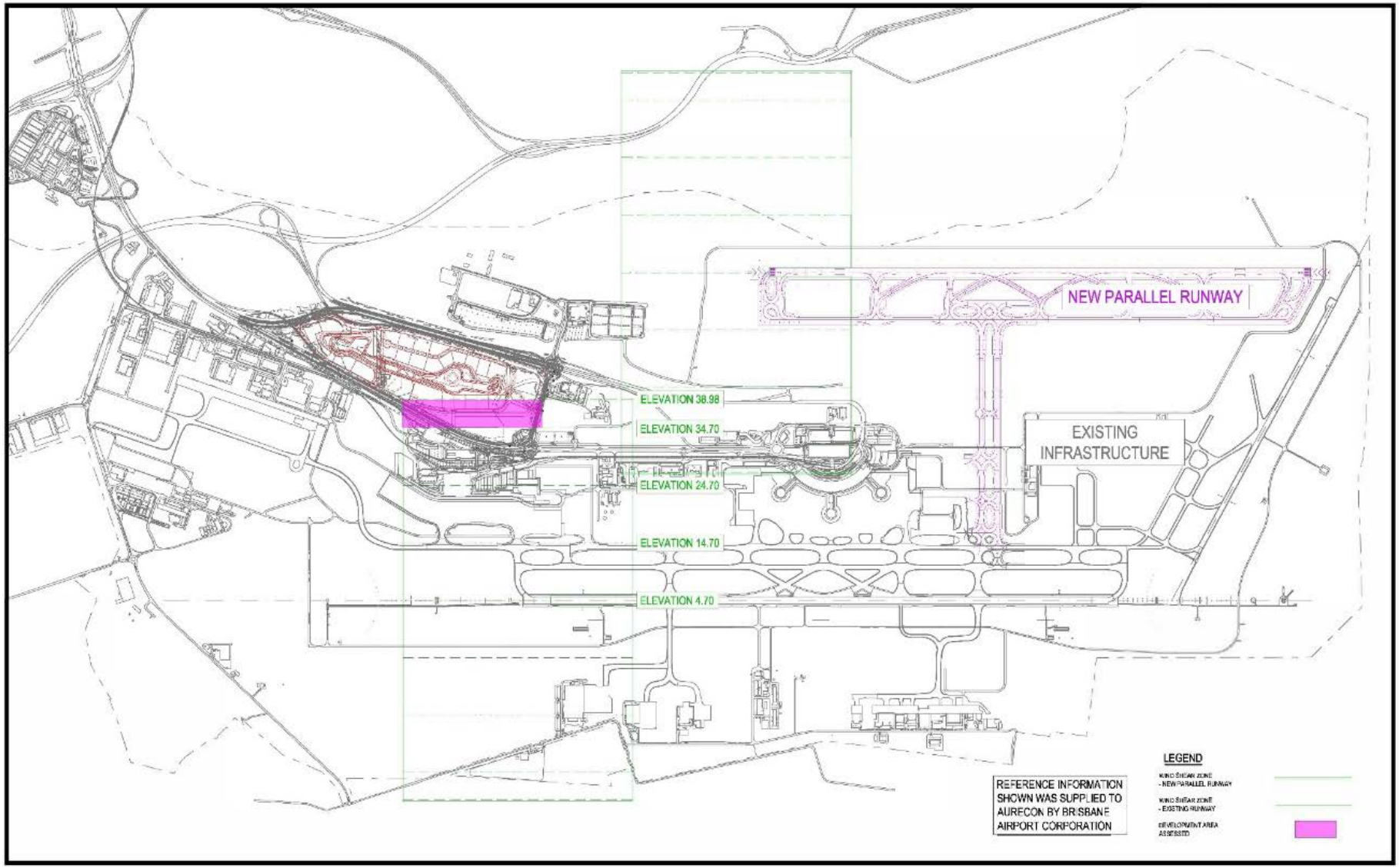


Figure 23 Wind shear assessment zone

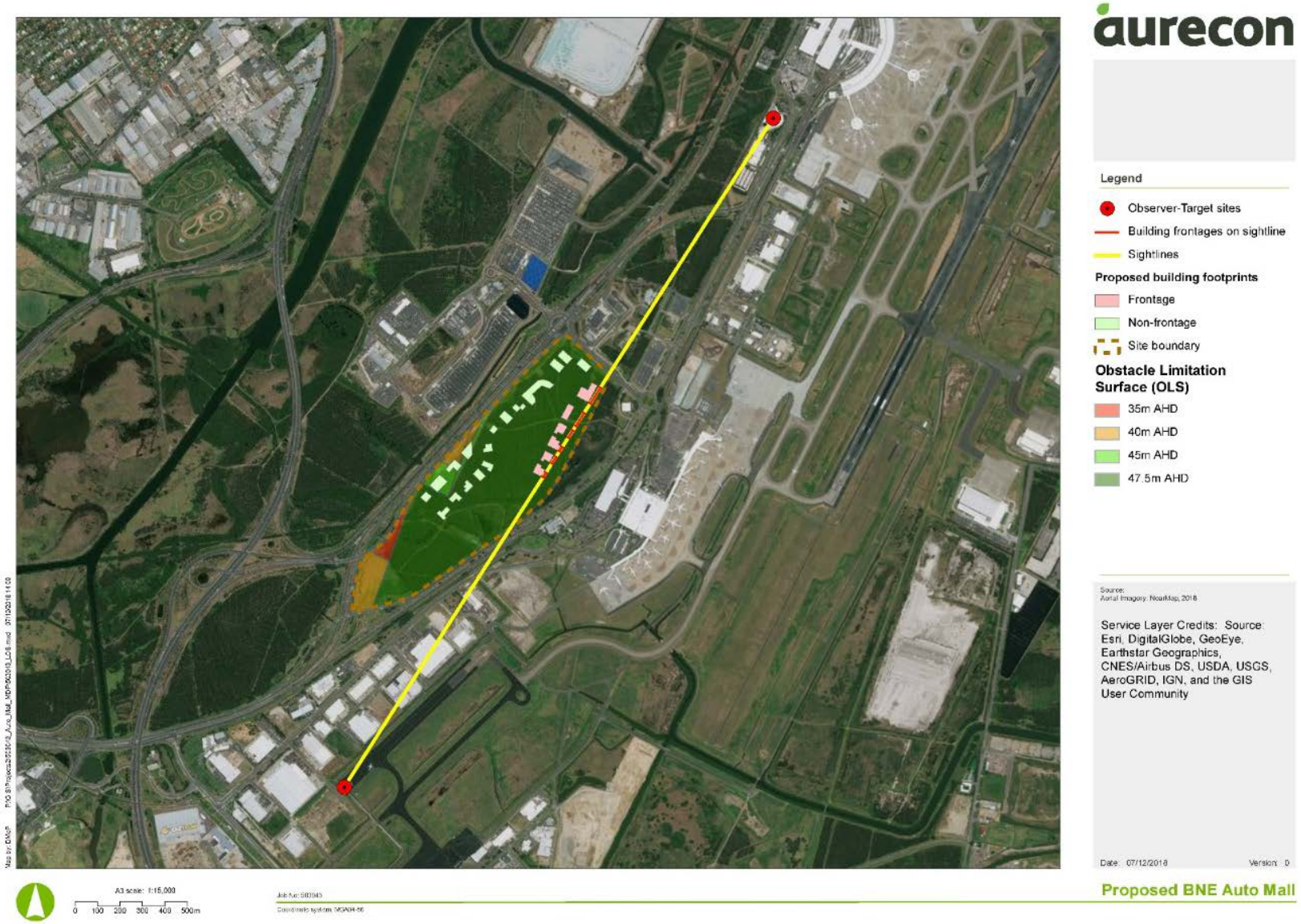


Figure 24 Line of sight assessment

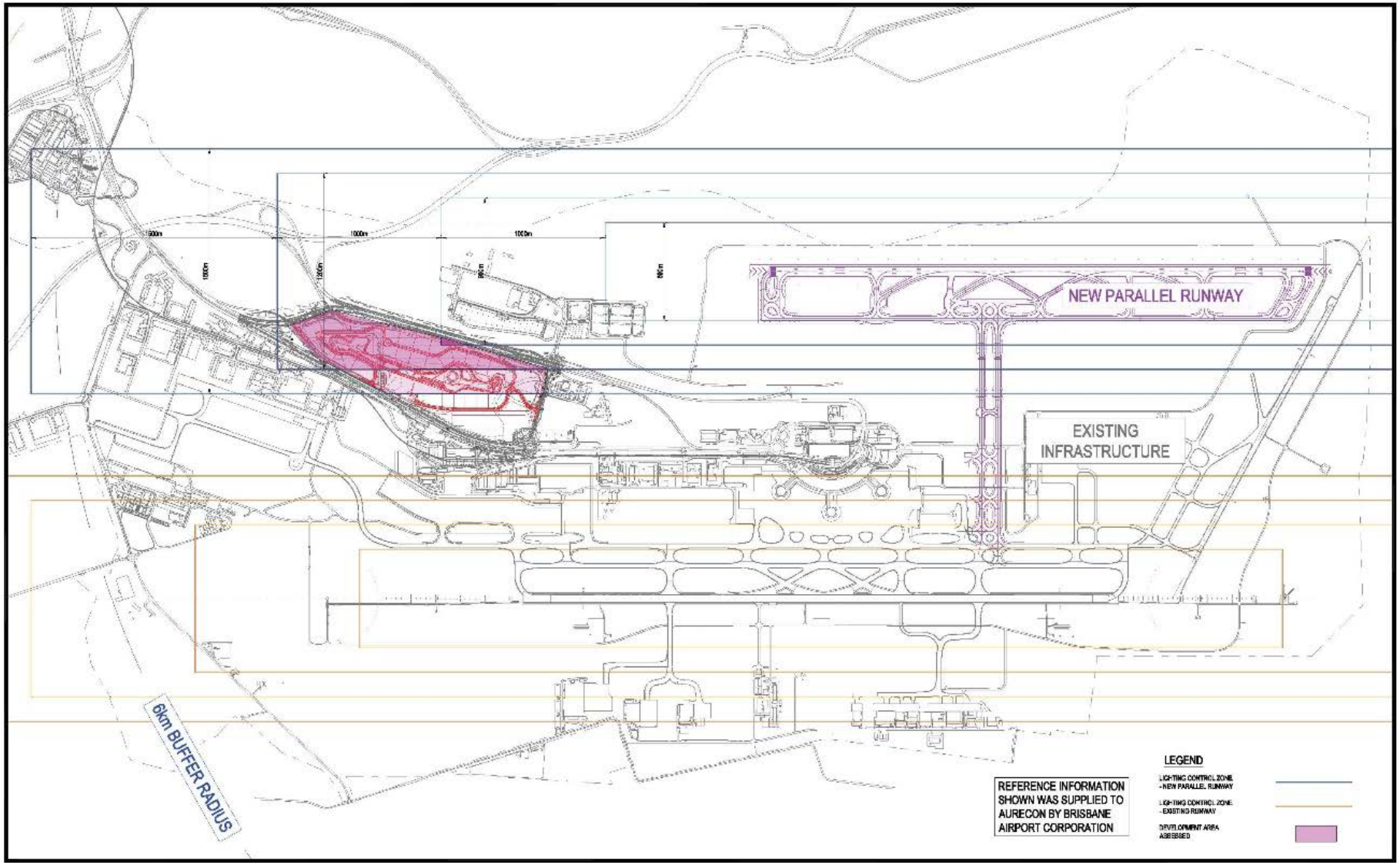


Figure 25 Lighting control zones

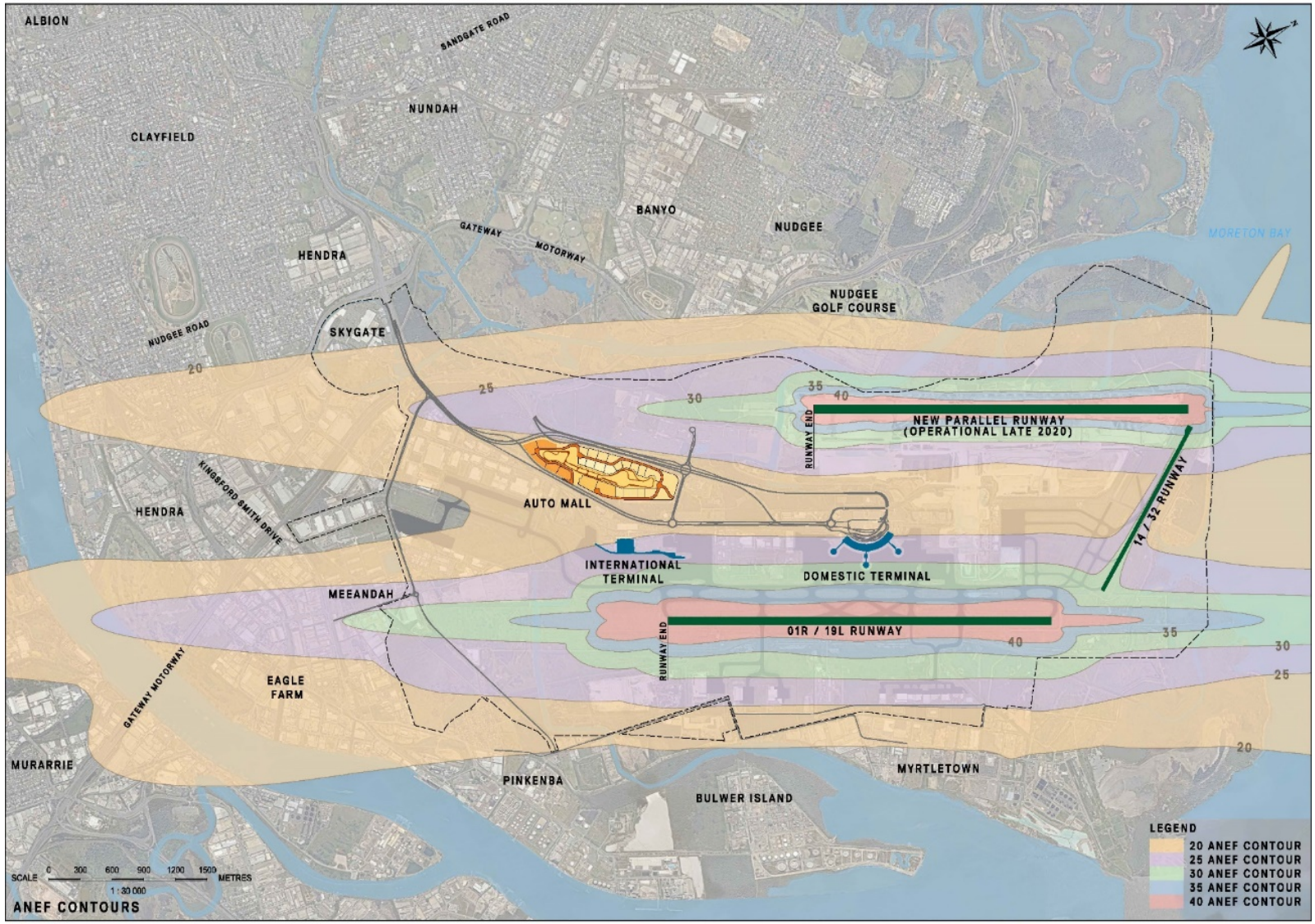


Figure 26 ANEF contours

5.3 Other infrastructure and services

5.3.1 Sewerage

Initially, sewage flows from the BNE Auto Mall will be injected to a 75 mm diameter rising main on Nancy Bird Way, which will ultimately discharge flows to Luggage Point. However, the ultimate discharge location for the development area will be south along Airport Drive to an existing sewage pumping station on Qantas Drive. This existing sewage pumping station is considered to be able to accommodate the ultimate flows from the development area.

5.3.2 Stormwater

Development of the BNE Auto Mall will improve the stormwater run-off quality with the establishment of water sensitive urban design (e.g. swales, landscaping etc). Further details on the design of these stormwater features are discussed in Section 6.3.3. Stormwater run-off will likely be managed and treated by:

- Rainwater tanks:
  - Rainwater to be captured from roof areas and used for onsite non-potable uses (e.g. car washing, irrigation, toilets etc); and
  - Will reduce the volume of untreated run-off entering the perimeter drain.
- Stormwater swales:
  - Incorporated, where practical, to facilitate a functioning landscape; and
  - Encouraged to have a generous depth of sandy loam to provide a good growing media for landscapes, including large canopy trees, while still providing additional filtration of run-off.
- Streetscape design:
  - Vegetated with biopods to capture and treat surface runoff from all road reserves; and
  - Located directly upstream of roadside pits.
- Perimeter drain:
  - A key visual landscape feature for the BNE Auto Mall for external traffic;
  - Bunding and flood control through permanent tidal gates to provide protection from external flood events;
  - Flood mitigation of internal run-off for the duration of storm events;
  - Treatment of ASS via lime trenches located within the batters; and

The perimeter drain has been designed to contain a flood immunity of 1% Annual Exceedance Probability (AEP). Permanent tidal gates will be installed to prevent backwater from regional flood events and storm surge/tidal events entering the development area. Flood immunity of the BNE Auto Mall will also be achieved through the higher levels of the enclosing road embankments of Moreton Drive, Nancy Bird Way and Airport Drive. The Airport Drive median would need to be raised by up to 200 mm in some areas through landscaping to achieve 1:100 year flood immunity.

5.3.3 Electricity

The Energex easement traverses the southern half of the development area and contains HV feeder cables that supply the Airport Intake Substation (AIS), and other HV feeders. The AIS is located on the Airport Drive side of the development area and is one of three intake substations for BAC. 11 kV HV feeders extend from AIS along the Airport Drive side of the Auto Mall site, to supply the International Terminal Building (ITB), and other loads along Airport Drive. Another HV feeder extends back across the Auto Mall site, along the Energex easement, and then the western side of Moreton Drive, to supply the Central Parking Area, the New Parallel Runway, the airport control tower and the Australian Advanced Air Traffic System (TAAATS) building. BAC has and will continue to liaise closely with Energex to ensure the protection of this easement.

It should also be noted that several pad-mounted substations are located within the development area, including:

- On the corner of Moreton Drive and Nancy Bird Way;
- Adjacent to the Kingsford Smith Memorial; and
- On the south east corner of the site, adjacent to Airport Drive.

The AIS currently has spare capacity that could accommodate the load from the BNE Auto Mall. However, the BNE Auto Mall combined with other future developments within the Airport are likely to generate substantial demand and will most likely exceed the current spare capacity at the AIS in the future. As such, the development of the HV infrastructure around the BNE Auto Mall should incorporate provision for possible supply from intake substations other than AIS, most likely the Lomandra Intake Substation (LIS).

Lighting as well other track and infrastructure loads (e.g. signalling, advertising, CCTV, PA system, sirens etc) will be supplied via LV ring feeders installed around the service road and performance track. The flood mitigation pumps at each of the flood control gates will also require a 50 kW supply as well as portable emergency generators.

5.3.4 Potable water

The entire BNE Auto Mall will be supplied by a combined potable and firefighting ring main. The potable water system will likely be initially supplied by a connection to the existing water main on Nancy Bird Way with a second connection to be later developed across Airport Drive, connecting to the Nudgee water main.

Two short spur mains from the ring main to trackside will be made at either end of the performance track to provide firefighting capacity, track washing water and/ or tanker filling trackside. These two spur mains will also provide an interim supply to the 4WD testing circuit and skid pan until a future connection to the recycled water system is made. Water used for these purposes will be captured by the stormwater drainage system.

5.3.5 Recycled water

There are currently two sources of recycled water supply to the BAC recycled Class A water network located at Lakeside Drive supply and the QUU supply from Sugarmill Road. Currently the majority of recycled water consumed by BAC is supplied by the Class A water network and used to supply the cooling towers at the International and Domestic terminals, construction use (e.g. dust suppression) and irrigation at the International Terminal Building, the Skygate precinct and the golf course. In 2013, there was 200 kL/day of surplus recycled water supply available.

Recycled water demand from the BNE Auto Mall will be low and able to be supplied by the existed recycled water main capacity. Recycled water demand includes irrigation of landscaped areas and use on the track, manoeuvring areas, skid pan and 4WD testing circuit.

5.3.6 Telecommunications

The BNE Auto Mall will require telecommunication connectivity for:

- BAC facilities and systems (e.g. irrigation, substation and sewage monitoring, wireless networks, security etc);
- Retail tenants, who will require telecommunication carrier services and flight information display systems;
- Performance track operations, such as the trackside control room, lighting, advertising, intelligent transportation systems, warning systems, noise monitoring etc.

Telecommunications infrastructure exists in the areas surrounding the Auto Mall development site, however the site itself contains minimal existing infrastructure. Existing telecommunications cabling along the Energex Easement is to remain.

A track-side operations and control room will be required to house electronics and systems necessary for performance track applications. It is recommended that this room meet the minimum infrastructure requirements of a Class 3 distributor as defined in the BAC Communications Distributor Guidelines.

Two precinct distributors are required with pit and pipe reticulation throughout the precinct and connected back to the existing BAC telecommunications infrastructure via new underground conduits. One precinct distributor is currently situated within the AIS building and will be repositioned to nearby the AIS building, while the other will be located within the track-side operations and control room.

Field cabinets for end devices (e.g. CCTV, building management system panels etc) will be located throughout the precinct with connectivity served from the two precinct distributors. These field cabinets will also serve trackside areas, although would be located outside of the safety barriers.

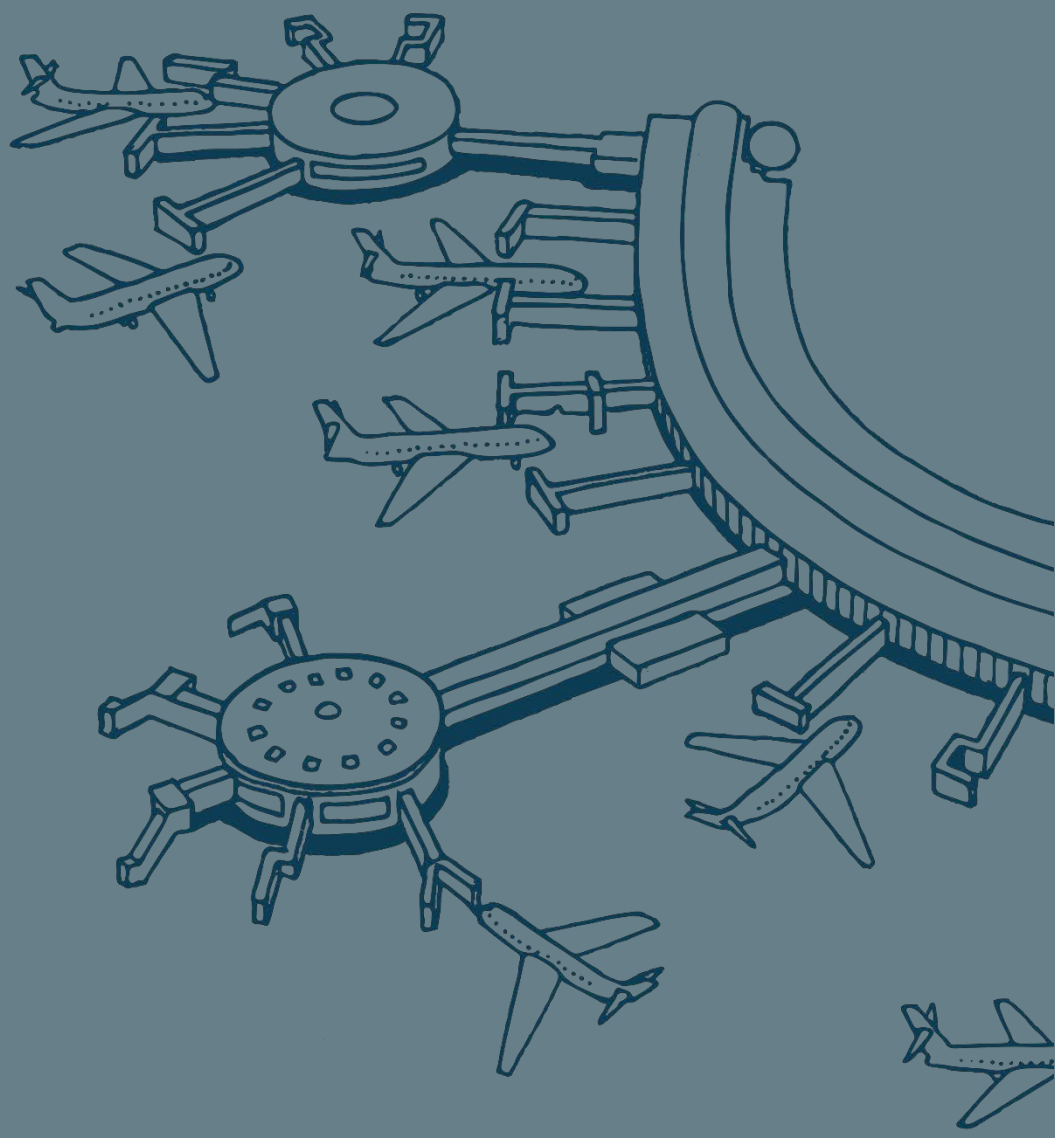
A dedicated mobile carrier equipment room is proposed to enable mobile coverage across the development area.

5.3.7 Mitigation measures

Finalisation of positioning of civil services will occur during detailed designed. Shared trenching is proposed for services, where practicable, such as telecommunications and LV power, which share similar easement requirements.

It is likely that a number of the buildings to be developed in the development area will include rooftop photovoltaics (PV) generation. Consideration needs to be given to transformer size and manufacturer of the inverter to which the PV generation will be connected.

The current recycled water peak demand surplus available for the BNE Auto Mall and the anticipated recycled water demands from track operations will need to be determined. In addition, the timing and capacity of a potential connection from the development area to the Seqwater Class A recycled water network will need to be confirmed. During detailed design, and once the above is confirmed, the recycled water servicing plan for the development area can be confirmed.



6

ENVIRONMENTAL ASSESSMENT

6. Environmental assessment

This section discusses the potential environmental and socio-economic impacts of the Project during the construction and operation of the BNE Auto Mall precinct. Mitigation measures for minimising and/or managing these impacts are also included. Environmental assessment and mitigation measures are MDP requirements under Section 91 of the Airports Act.

Impacts related to the site preparatory works (e.g. clearing, filling, surcharging etc), which are currently being conducted on site, are not subject to this assessment. These were assessed and endorsed through the EAR and EMP by the former DIRD and the AEO.

Works included in this environmental and social assessment are:

- Construction and operation of the proposed BNE Auto Mall precinct at Brisbane Airport.

6.1 Geology, Soils and Topography

6.1.1 Baseline Conditions

6.1.1.1 Topography

The BNE Auto Mall site has been under development since September 2017. Land clearing has occurred and ground improvement and bulk earthworks are currently in progress, as per Section 2.8. The site is flat and low-lying with a surface elevation raised up to 3.4 – 4.2 m AD during the land development phase with clean imported fill material. A man-made drainage channel has been installed around the perimeter of the site to capture any stormwater runoff from the site. Potential sediment and erosion control issues during bulk earthworks and filling have been addressed from the construction of this perimeter drain, with rainfall events captured, and release permitted once water quality parameters are compliant. The perimeter drain outlets are located at two culverts in the north (Moreton Drive north culvert and Nancy Bird Way culvert) and one culvert in the south (Moreton Drive south culvert).

6.1.1.2 Geology and Soils

Soil profiles encountered during the geotechnical investigation determine a topsoil overlying Holocene aged younger alluvium extending to depths of up to 30 m bgl. Pleistocene aged older alluvium is present underlying the younger alluvium and the bedrock is either basalt or sandstone. Clean fill material from various locations across the greater Brisbane area has been imported to the site during bulk earthworks for filling and surcharging.

6.1.1.3 Acid Sulfate Soils

The airport is situated on a coastal plain that is predominately less than 5 m AHD and as such, potential acid sulfate soils (PASS) conditions commonly exist across the airport site. During acid sulfate soil (ASS) investigations for the land development of the site, ASS materials were determined to be present across the site, with actual ASS (AASS) in the surface soils to below the water table. Across the site, PASS material underlies the actual ASS. All ASS material encountered was managed during the land development of the site under an approved ASS Management Plan.

The new material for fill placement was transferred to site from various locations across the greater Brisbane area and was deemed to be free from acid sulfate soil through Fill Source Assessments undertaken by the haulage contractor for each source of fill. This was undertaken during site preparatory works, as per Section 2.8.

6.1.1.4 Contamination

A contaminated land assessment was conducted for the site prior to the commencement of the land development works. During this assessment, Golders (2016a; b) identified a known contaminated site (Site 28 – black sands) which is '*located at the southern end of the Auto Mall Precinct within the Stage 2 investigation area, on the boundary with the Stage 1 investigation area*'. During site preparatory works, suspected black sand/mineral sands were identified and three shallow soil samples were collected and analysed for titanium and zirconium. Results indicated that titanium concentrations were generally elevated in shallow soils along the eastern portion of the site. Further analysis of surface samples in 2017 and 2018 confirmed that the material suspected to be minerals sands is ilmenite. The mineral sand content and radiation emission dosage are significantly below published guidelines and will not cause harm to human health and/or the environment. Refer Appendix G for further information.

Minor metal/metalloid and per- and poly-fluoroalkyl substances (PFAS) concentrations were detected in shallow soils and groundwater across the site, however, it was considered that there was no risk to human health and/or the environment (Golders 2016 a; b).

PFAS was detected at concentrations above the laboratory limit of reporting in four soil samples out of the 52 soil samples collected across the site. PFAS concentrations in the soil ranged between not detected (<0.0002 mg/kg) to 0.0025 mg/kg, and comprised PFOS, PFHxS and PFTeDA at low concentrations. All PFAS concentrations were below screening criteria for the protection of human health and the environment for commercial/industrial site settings, as outlined in the PFAS National Environmental Management Plan (Heads of EPA 2018). There were no exceedances of the AEPR guidelines for metals in soil. However, minor exceedances of the NEPM 2013 Environmental Investigation Levels were noted for nickel in two samples and zinc in two samples. Further details are provided in the Contaminated Summary Report in Appendix G.

BAC maintains compliance with the NEMP through its project CEMP and management plans, which will continue through the construction phase of this project.

Under the endorsed EAR (refer Appendix D), the CEMP for the site preparatory works and the current Building Approval, fill material has been imported on to the Auto Mall project site as part of the bulk earthworks and surcharging phase. Fill material imported onto Brisbane Airport is required to comply with the National Environmental Protection Measure and the BAC Importation of Structural Earth Fill Procedure. The intent of this procedure is to outline the process of importing fill material to ensure reasonable and practicable measures are implemented to prevent or minimise the generation of pollution, as required under 4.01 of the AEPR. The procedure and reporting for each fill source is to be undertaken by a suitably qualified person which includes an on-site visit and an assessment of:

- The current use and history of the fill source;
- The Queensland Government Contaminated Site Registers - Environmental Management Register and Contaminated Land Register;
- Red Imported Fire Ants;
- Weeds; and
- Acid Sulfate Soils.

Compliance with the Importation of Structural Earth Fill Procedure is demonstrated with the submission of a report to BAC, who review, and if acceptable, provide approval prior to the import of any fill material from the source.

6.1.2 Assessment of Impacts

6.1.2.1 Topography, Geology and Soils

The land development works currently in progress (e.g. earthworks, surcharging etc) are intended to prepare the site for construction of the BNE Auto Mall. Geotechnical investigations were undertaken by Golders (2016c) to assist with concept surcharge design separately for the track layout and the roads/buildings. Based on these works, it is considered that the site is suitable for the construction and operation of the performance track to iEDM (the track designer) requirements and the construction and operation of the roads and buildings.

The BNE Auto Mall will replace the existing site with a combination of hardstand, landscaped areas and the performance track. Excavation will be required for installation of services and building foundations, which may potentially cause erosion and/or sedimentation if managed incorrectly.

6.1.2.2 Acid Sulfate Soils

While the imported fill material does not contain ASS material, some activities (e.g. installation of services, building foundations) may require excavation through the fill material and into the natural soil. As such, ASS material in the natural soils may be disturbed and undergo oxidation. These soils will need to be managed through the implementation of a site-specific ASS Management Plan, which will comply with the ASS Management Plan contained within the EAR and EMP as endorsed by former DIRD for the site preparatory works.

6.1.2.3 Contamination

While the imported fill material does not contain contaminated soils, some activities (e.g. installation of services, building foundations) may require excavation through the fill material and into the natural soil. The contaminated land investigation determined that there was no risk to human health and/or the environment, and as such, the risk of encountering elevated contaminants in the natural soil is considered low.

It is anticipated that operation of the BNE Auto Mall may involve storage and use of fuels, oils, solvents and other potentially hazardous chemicals as a result of testing and maintaining vehicles. The storage and use of these potential contaminants may result in soil and/or groundwater contamination. These activities will need to be appropriately managed as detailed below.

6.1.3 Mitigation Measures

6.1.3.1 Topography, Geology and Soils

Erosion and sedimentation impacts during this excavation works will be managed through a site-specific Erosion and Sediment Control Plan, which will be prepared as part of a CEMP for each stage of works. Further management of stormwater quality and sediment and erosion control during construction and operation of the BNE Auto Mall is discussed in Section 6.3.3.

Following the implementation of the above mitigation measures, the impact of the Project on topography, geology and soils is assessed as:

Topography, geology and soils	
Construction phase	Low risk
Operational phase	Negligible risk

6.1.3.2 Acid Sulfate Soils

Where disturbance of ASS material is expected, an ASS Management Plan will need to be developed and implemented to ensure adverse impacts to stormwater run-off and groundwater from increased acidity are avoided. The ASS Management Plan will be required to comply with the Queensland Acid Sulfate Soil Technical Manual – Soil Management Guidelines (v4.0) (Dear et al. 2014).

Where excavations occur within the natural material underlying the fill material imported during the site preparatory works, soil material is to be assumed to be ASS until proven otherwise and are to be managed by stockpiling within a nominated location (as agreed by the BAC Environmental Advisor) and neutralised by lime treatment.

Groundwater management and monitoring in relation to ASS is provided in Section 6.3.3.

Following the implementation of the above mitigation measures, the impact of the Project on acid sulfate soils is assessed as:

Acid sulfate soils	
Construction phase	Negligible risk
Operational phase	Negligible risk

6.1.3.3 Contamination

During excavation works into the natural soil, if any unexpected contamination is encountered (e.g. odours, staining or other signs of contamination), a suitably qualified consultant should be commissioned to assess the potential impact and recommend additional management strategies if required.

Groundwater monitoring for PFAS and dissolved metals/metalloids will continue during construction of the BNE Auto Mall once every six months (refer Section 6.3.3). Groundwater monitoring will cease upon completion of construction.

A Construction Environment Management Plan (CEMP) will be developed and implemented for construction of the BNE Auto Mall. The CEMP will contain procedures for assessing and managing PFAS impacted soil, groundwater and surface water. The CEMP will be developed and implemented prior to the commencement of any horizontal or vertical construction or other works that have the potential to disturb areas of known or potential PFAS contamination.

The CEMP will be consistent with the National Water Quality Management Strategy, including the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, as well as the PFAS National Environmental Management Plan (HEPA 2018), including its guideline values, as amended from time to time.

The CEMP will set out:

- Project scope and boundaries;
- Roles and responsibilities;
- Conceptual site model - including maps and any monitoring data - identifying the extent concentrations of possible contamination within the project footprint and nearby;
- Possible exposure pathways and ecological receptors - both directly within the Project site and also from the Project site to any nearby receptors;
- The site-specific risk assessment that identifies possible risks tailored to the reported or expected PFAS concentrations, exposure pathways, and potential receptors on and off the Project site;
- Procedures for the management or remediation of PFAS contamination within the Project site;
- Strategies to reduce runoff and migration of contamination within and off the proposed Project site;

- Operational procedures for managing earthworks and the stockpiling or storage of contaminated water / soil / rock / concrete / tarmac / etc, including in relation to encapsulation, bunding, leachate control and disposal;
- If necessary, a contingency action plan for unexpected PFAS contaminant discoveries; and
- Any one-off or ongoing soil and water monitoring requirements and testing procedures, and their relevant quality assurance and quality control procedures.

The CEMP will also impose the following requirements:

- For soil re-use, the ecological guideline values for soil of 0.01 mg/kg PFOS should be used as a trigger for further risk assessment;
- Any PFAS contaminated material (including but not limited to excavated soil or sediment, leachate from soil or sediment, water arising from de-watering of soil or sediment, concrete, tarmac, appliances, pumps, pipes, hoses, fittings) must be handled appropriately and disposed of in an environmentally sound manner such that potential for the PFAS content to enter the environment is minimised;
- Any PFAS contaminated material with a PFOS, PFHxS or PFOA content above 50 mg/kg or 50 mg/L (as appropriate), must be stored or disposed of in an environmentally sound manner that will achieve nil environmental release of their PFAS content; and
- Detail how materials at or over the concentrations listed above, if encountered, would be handled to achieve zero environmental release.

Any storage of fuels and hazardous substances will need to be conducted in accordance with AS1940:2017, *The storage and handling of flammable and combustible liquids*. All hazardous materials will need to be stored with an up to date material safety data sheet (MSDS). An MSDS register will be maintained adjacent to the hazardous material storage area with the location clearly signed.

Hydrocarbon products stored in volumes greater than 200 L must have a form of secondary containment. The secondary containment volume must be 110% of the volume of material stored within the bund. Waste spills on site will be managed on site to prevent soil contamination with the use of spill kits and user training.

Following the implementation of the above mitigation measures, the impact of the Project on contamination is assessed as:

Contamination	
Construction phase	Negligible risk
Operational phase	Low risk

6.2 Ecology

6.2.1 Baseline Conditions

Clearing of vegetation within the site commenced in September 2017 under the land development phase of the Project. Upon commencement of construction works, the site will not support any flora or fauna species, as is evident in Section 2.8. The existing CEMP required all plant and materials (including the fill material) brought to the site to be certified free of declared pests and weeds and included a pest and weed management plan to ensure that proliferation of pest and weed species within the site does not occur.

6.2.2 Assessment of Impacts

The BNE Auto Mall will comprise a combination of hardstand, landscaped areas and the performance track. An EPBC Act self-assessment was undertaken in accordance with the Significant Impact Guidelines 1.1 (2013) for matters of national environmental significance (MNES) and Significant Impact Guidelines 1.2

(2013) for actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies. The self-assessment is provided in Appendix H. Results from the self-assessment indicate that the BNE Auto Mall is not likely to result in a significant residual adverse impact upon the identified MNES and/or the actions on, or impacting upon, Commonwealth land. However, there is potential for pest and weed species to be introduced to the site through construction equipment and landscaping materials.

New landscaped areas will be provided as part of the development, which will be designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. Landscape design will incorporate resilient, native species found within the airport's coastal setting that will not attract birds or flying foxes and, when fully mature, will not compromise operational airspace. Further details on landscaping are provided in Section 6.7.

6.2.3 Mitigation Measures

The following mitigation measures will be implemented to manage any impacts on ecological values during construction and operation of the BNE Auto Mall:

- No dogs or other animals will be permitted on the site (with the exception of registered assistant animals);
- Contact the BAC Environmental Advisor in the event that an animal is injured during construction, followed by 1300 Animal (1300 264 625);
- Any landscaping on site will be designed in accordance with the Brisbane Airport Landscape Setting Strategy 2018;
- Report suspected outbreaks of declared weed species to the BAC Environmental Advisor;
- Report sightings of declared pest animals (as listed under the provisions of the EPBC Act and NC Act) to the BAC Environmental Advisor;
- Do not deliberately introduce declared weed and/or pest species as listed under the provisions of the EPBC Act and/or Biosecurity Act. Implement measures to ensure that all plant and materials brought into the BNE Auto Mall are certified free of declared pests; and
- Implement waste management measures to avoid increased abundance of pests and opportunistic native fauna.

Following the implementation of the above mitigation measures, the impact of the Project on ecology is assessed as:

Ecology	
Construction phase	Negligible risk
Operational phase	Negligible risk

6.3 Hydrology and Water Quality

6.3.1 Baseline Controls

6.3.1.1 Surface Water

A goal of water management under the AES 2014 is to mitigate potential impacts on water quality of surrounding ecosystems through the application of sustainable water management practices. Urban wastewater discharge, construction activities, landscaping and the storage of fuel and hazardous material have the potential to influence water quality of waterways surrounding the site.

The site is currently undeveloped and undergoing earthworks and surcharging with run-off from the site being captured by the perimeter drain. The overland path currently consists of uncovered soils. The perimeter drain has two discharge culverts in the north (Moreton Drive north culvert and Nancy Bird Way culvert) and one discharge culvert in the south (Moreton Drive south culvert), although these are not currently connected. Site drainage will be through the culverts into Landers Pocket Drain located approximately 100 m west of the Project site, with run-off eventually discharging into the Kedron Brook Floodway Drain, located approximately 900 m north of the Project site. All discharge culverts are currently bunded off from tidal influx during the earthworks and proposed infrastructure works. Surface water monitoring is undertaken by BAC across the airport on a regular basis, including in Landers Pocket drain and Kedron Brook Floodway Drain.

The downgradient receiving environment for the site will be the Airport drainage system (eg Landers Pocket Drain and others) and the Kedron Brook Drain. These waterways are located within the catchment of Brisbane Creeks – Bramble Bay and are defined as Moderately Disturbed under the *Environmental Protection (Water and Wetland Biodiversity) Policy 2019*. The waterways contain the following environmental values and potentially sensitive receptors:

- Aquatic ecosystems
- Secondary recreation
- Visual recreation
- Cultural and spiritual values

Airport drains and the Kedron Brook Drain are perennial drainage systems that are subject to tidal influences and discharge into Moreton Bay at Nudgee Beach, just north of Brisbane Airport. Surface water sampling was undertaken by PSK in January/February 2019 in the receiving Airport drains disconnected from the Auto Mall site. The surface water generally has a pH above 6.0, although two locations in the perimeter drain had very acidic conditions with pH of 2.6 and 2.7. Electrical conductivity ranged from 3.1 mS/cm (brackish) to 89.4 mS/cm (saline) while the turbidity of the surface water was generally below 20 NTU. Dissolved oxygen varied significantly from 25% saturation to 175%, although it is noted that all dissolved oxygen readings above 100% saturation were taken during a period of low rainfall. Further details are provided in Appendix G.

A number of PFAS chemicals, including PFOS, PFHxS and PFOA, were detected within these receiving waters at concentrations above the laboratory limit of reporting. Concentrations of sum of PFOS and PFHxS ranged between 0.007 µg/L and 0.017 µg/L, which, while below the screening criteria for drinking water and recreational water, are above the ecological screening criteria for 99% species protection.

Elevated metal concentrations in these receiving waters were also detected, including:

- Aluminium (up to 16.2 mg/L)
- Copper (0.011 mg/L)
- Lead (0.008 mg/L)
- Nickel (0.505 mg/L)
- Zinc (0.681 mg/L)
- Iron (433 mg/L)

These samples were taken from the perimeter drain in January 2019 and are likely to be related to the very acidic conditions (pH 2.6). Refer Appendix G for further details.

BAC commenced a PFAS Ambient Monitoring Program in February 2020 in Airport drains and receiving environments with further details provided in Appendix J.

6.3.1.2 Groundwater

While there are no discrete aquifers present at Brisbane Airport, the geology can be divided into two distinct layers; Upper Holocene alluvia and Lower Holocene alluvia. The shallow aquifer is present in the Upper Holocene, which comprises interlayered clays, silts and sands with low permeability (BAC 2006). The shallow aquifer fluctuates significantly with tidal and rainfall events and discharges to creeks and drains within Brisbane Airport. The Lower Holocene alluvia comprises homogenous clays and silts and contains a deeper groundwater aquifer (BAC 2006). Permeability of the deeper aquifer is very low and groundwater movement is negligible.

A groundwater investigation was conducted on the site and included the gauging and sampling of ten boreholes across two monitoring events (Golders 2016a; b). Groundwater was shallow, with depths ranging between 0.71 to 2.57 m bgl (0.87 to 2.13 m AD) (Golders 2016a; b). The flow direction was assessed to be generally towards the west to north west towards Landers Pocket Drain (Golders 2016a; b). Groundwater was determined to be brackish to saline with acidic to neutral conditions (pH 3.65 to 6.99). Groundwater within some portions of the site was determined to be vulnerable to acidification given a low buffering capacity.

PFAS was detected in three of the ten groundwater monitoring wells sampled in January 2016 and in eight of the ten monitoring wells when resampled in October 2016. Concentrations of sum of PFOS and PFHxS ranged between <0.002 µg/Land 0.405 µg/L. Concentrations were above the screening criteria for drinking water in two groundwater wells (AM-MW14 and AM-MW16), sampled in October 2016. There were no concentrations above the screening criteria for recreational water. Further details are provided in the Contaminated Summary Report in Appendix G.

For metals in groundwater, exceedances of the AEPR Marine Water guideline and NEPM 2013 Groundwater Investigation Levels (GILs) for Marine Waters were identified for nickel and zinc in five groundwater wells. Nickel concentrations also exceeded the NEPM 2013 GILs for drinking water in three groundwater wells. Further details are provided in the Contaminated Summary Report in Appendix G.

Groundwater monitoring has continued through site preparatory activities, with consistent findings to the above (refer Appendix G).

6.3.2 Assessment of Impacts

6.3.2.1 Surface Water

Development of the BNE Auto Mall will improve the hydrology and water quality of the stormwater run-off with the establishment of water sensitive urban design (e.g. swales, landscaping etc). Stormwater run-off from the site will likely flow either through vegetated swales or be captured by streetscape biopods for treatment prior to discharge into the perimeter drain.

The perimeter drain has been designed to contain a flood immunity of 1% Annual Exceedance Probability (AEP). Permanent tidal gates will be installed to prevent backwater from regional flood events and storm surge/tidal events entering the Project site once developed. During the construction phase, the discharge culverts will be bunded off to prevent uncontrolled sediment or runoff release.

Surface water quality impacts that have potential to occur during construction and operation of the BNE Auto Mall, include:

- Construction impacts:
    - Sedimentation of the perimeter drain and downstream watercourses from construction activities due to inadequate erosion and sediment control measures and high rainfall incidence;
    - Potential disturbance of AASS and PASS, resulting in a decline in water quality;

  - Release of PFAS-impacted surface water from the perimeter drain will increase the PFAS load in the Airport drains. However, it is noted that recent measurements of PFAS concentrations in the perimeter drain are below those in the receiving environment;
  - Hydrocarbon and chemical spills from construction plant and vehicles;
  - Release of weed seeds and pathogens into drainage lines from vehicles and machinery traversing the Project site;
  - Litter and rubbish from occupation by construction workers;
- Operational impacts:
  - Track washing of the performance track, manoeuvring courses, skid plan and 4WD track may be undertaken to remove any build up of dust, gravel and/or oil that may have occurred. The resultant water will be captured by the stormwater drainage system and may contain contaminants and/or a high sediment load;
  - Spills or leaks from storage and use of fuels and other hazardous chemicals, resulting in a decline in water quality; and
  - Litter and rubbish from tenants and visitors to the BNE Auto Mall.
- Two short spur mains from the ring main to trackside will be made at either end of the performance track to provide firefighting capacity, track washing water and/ or tanker filling trackside. These two spur mains will also provide an interim supply to the 4WD testing circuit and skid pan until a future connection to the recycled water system is made. Water used for these purposes will be captured by the stormwater drainage system and discharged to the perimeter drain.

6.3.2.2 Groundwater

Given the shallow nature of the groundwater at the site, there is potential for the groundwater table to intersect with any excavations on site. As a result, groundwater may be impacted by any acid drainage from ASS disturbance. Cuttings and excavations may require dewatering due to groundwater ingress, which may lead to passive dewatering of the surrounding groundwater.

Future tenancies within the BNE Auto Mall may involve storage and use of fuels, oils, solvents and other potentially hazardous chemicals as a result of testing and maintaining vehicles. Any spills or leaks of these potential contaminants may leach through the soil and impact groundwater quality.

6.3.3 Mitigation Measures

6.3.3.1 Surface Water

Erosion and sedimentation impacts during construction of the BNE Auto Mall will be managed through a site-specific Erosion and Sediment Control Plan, which will be prepared as part of a CEMP for these construction works. Mitigation measures relating to erosion and sediment control will include, but not be limited to:

- Minimise exposure of disturbed soils at any time;
- Divert water run-off from undisturbed areas around disturbed areas;
- All erosion and sediment control measures shall be constructed and maintained as per International Erosion Control Association (IECA) (2008) standard drawings;
- All erosion and sediment control devices shall remain in place until site stabilisation has been achieved, as directed by the BAC Environmental Advisor;
- Any potentially sediment-laden stormwater runoff shall pass through a sediment control device prior to entering the perimeter drain;

- Uncontaminated sediment removed from erosion and sediment control devices may be stockpiled and reused in landscaping or other fill projects, otherwise must be disposed of in an approved environmentally safe manner;
- Maintenance of erosion and sediment control measures should continue until the Project site has been suitably stabilised and further disturbance of soil by erosion is prevented.

For any completed earthworks or disturbed areas where construction is likely to be suspended, cover requirements are to be determined in consultation with the BAC Environmental Advisor and be in accordance with the IECA Guidelines (2008). The types of cover considered should include hydromulch, soil stabilising polymers, grasses, erosion control blankets etc.

Water will only be released from the perimeter drain if the PFOS and PFOA concentrations are below the freshwater and marine guideline values for aquatic ecosystem health, at the 95% species protection level (currently PFOS = 0.13 µg/L and PFOA = 220 µg/L) (HEPA 2018). Prior to release of any water from the perimeter drain during construction activities, surface water monitoring is required within the perimeter drain and the receiving waters. Analysis for PFAS and dissolved metals/metalloids will be conducted to ensure concentrations in the perimeter drain are equal to or below existing concentrations of receiving waters and/or are reflective of the risk profile of the catchment. Given the Project site is not a known source of PFAS, it is unlikely that PFAS concentrations will be greater than the receiving surface water. However, should elevated PFAS concentrations be detected within the perimeter drain, appropriate measures, such as treatment and/or disposal of impacted water will be undertaken in accordance with the CEMP (refer Section 6.1.3).

During excavations of the perimeter drain, groundwater and tidal influences have resulted in the perimeter drain holding water in various sections. In addition to the lime cut off trench installed during the bulk earthworks phase, these standing water levels within the drain have assisted with the management of potential ASS by not allowing the oxidation of soils. Although the perimeter drain is to be vegetated, the primary stormwater treatment measures are to be implemented as per the BNE Auto Mall Development Plan (refer Appendix C). These stormwater treatment measures, which include vegetated swales and rainwater tanks, will capture and treat stormwater prior to release into the perimeter drain. Vegetation within the perimeter drain will provide further water quality polishing with waters required to comply with water quality parameters prior to release into receiving environments.

If pH is measured as less than 6.0, the water is to be treated prior to release and additional lime added to the base and walls of the perimeter drain, as per the endorsed ASS Management Plan.

The Construction Contractor is required to notify the site Superintendent immediately of any incidents with the potential to impact on water quality. An incident/accident report form is to be filled out if any non-conformances are found.

During operation of the BNE Auto Mall, a stormwater management strategy will be implemented. Each tenancy will participate in the precinct stormwater management strategy, which will achieve a reduction in total pollutant load (compared with untreated stormwater run-off):

- Total suspended solids (TSS): 80% reduction;
- Total phosphorus: 60% reduction;
- Total nitrogen: 45% reduction; and
- Gross pollutants (>5 mm): 90% reduction.

Stormwater runoff from each Lot and the performance track and ancillary tracks will be managed during operation of the BNE Auto Mall to meet the above objectives, as detailed in Table 16. In addition, each tenancy and the Track Operator will be responsible for developing an Operational Environmental Management Plan (OEMP) in accordance with BAC guidelines, to ensure environmental aspects are managed accordingly during the operational phase. BAC will provide a risk rating to all tenants within the BNE Auto Mall. Tenants with a certain risk rating will be required to provide a copy of the OEMP and audit reports to BAC.

PFAS will be monitored in surface waters quarterly for 12 months once the performance track is operational.

Table 16 Stormwater management strategies

Stormwater management strategy	Details
Rainwater tanks	Allocation of one 100kL rainwater tank per lot. Rainwater to be captured from roof areas is considered generally clean and will be used for on site non-potable uses (e.g. car washing, irrigation, toilets etc). This will reduce the volume of untreated run-off entering the perimeter drain.
Stormwater swales	Stormwater swales will be incorporated, where practical, to facilitate a functioning landscape. A generous depth of sandy loam topsoil will be provided for a good growing media for landscapes, including large canopy trees, while providing additional filtration of run-off. Stormwater runoff from all hardstanding areas will likely be directed to stormwater swales, which will be 5 m wide, situated in each lot, adjacent to neighbouring allotments, to create one swale with a total width of 10 m, underlain by 800 mm of sandy loam topsoil. These swales will generally be located at approximately 200 m intervals across the site to form part of the precinct wide stormwater management strategy to passively treat stormwater prior to entering the perimeter drain.
Streetscape design	Vegetated with biopods to capture and treat surface runoff from all road reserves, including a portion of the performance track. The biopod systems will be located directly upstream of roadside pits, which will accept overflows, and also provide a discharge point for systems underdrains. The biopods will be vegetated in accordance with the BAC Landscape Setting Strategy.
Perimeter drain	The perimeter drain will serve as a key visual landscape element when viewing the site from the surrounding road network, while providing essential flood mitigation for the site. Stormwater runoff from the performance track will be predominately captured through underground pipes, which discharge to the perimeter drain. The perimeter drain will likely be vegetated for stormwater treatment in accordance with the BAC Landscape Setting Strategy. Bunding and flood control will occur through permanent tidal gates, which will provide protection from external flood events.

Flood immunity of the Project site will be achieved through protection by the higher levels of the enclosing road embankments of Moreton Drive, Nancy Bird Way and Airport Drive. To achieve 1:100 year flood immunity, the Airport Drive median would need to be raised by up to 200 mm in some areas through landscaping. These road systems, combined with potential flap gates installed on a number of major culvert crossings, will prevent backwater from regional flood events and storm surge/tidal events entering the Project site. All discharge culverts will continue to be bunded off from tidal influx during the earthworks and proposed infrastructure works.

Following the implementation of the above mitigation measures, the impact of the Project on surface water is assessed as:

Surface water	
Construction phase	Low risk
Operational phase	Negligible risk

6.3.3.2 Groundwater

Mitigation measures related to the potential contamination of groundwater during operation of the BNE Auto Mall are detailed in Section 6.1.3.

During construction, some excavation may be required for installation of services and construction of building foundations. Given the site has been built up with clean fill during site preparatory works (refer Section 2.8), it is considered that the majority of excavations will not intersect with the groundwater table. However, if dewatering of any excavations is required, the water is to be tested for pH, acidity and metals/metalloids and may require treatment prior to disposal/discharge in accordance with an ASS Management Plan. Reinjection of extracted groundwater will occur should the groundwater meet the performance indicators outlined in the ASS Management Plan. Dewatering of groundwater that has seeped into excavations will be undertaken within minimal timeframes to allow recharge as soon as practicable. Dewatering will be undertaken in accordance with the *Queensland ASS Technical Manual: Soil Management Guidelines v4.0* (Dear et al. 2014). Prior to re-infiltration, reuse (i.e. dust suppression), or reinjection of groundwater from dewatering activities, an assessment of potential groundwater management options will be undertaken. This assessment will be consistent with the PFAS National Environmental Management Plan. Should dewatering activities be undertaken outside of the Auto Mall project boundary, further human health and environmental risk assessment will be undertaken in accordance with the PFAS National Environmental Management Plan. Direct discharge of groundwater into the perimeter drain will not be permitted and instead, active discharge of groundwater onto soils or into temporary seepage ponds will be undertaken

The perimeter drain will be maintained at a level consistent with seasonal groundwater levels, to reduce groundwater influx into the drain or excessive water leaving the site.

Groundwater arising from dewatering will only be discharged if the PFOS and PFOA concentrations are below the freshwater and marine guideline value for aquatic ecosystem health, at the 95% species protection level (currently PFOS = 0.13 µg/L and PFOA = 220 µg/L) (HEPA 2018).

The mobilisation of PFAS and metals/metalloids from soil to surface water and groundwater will be managed throughout the life of the Auto Mall, through the implementation of the site-wide CEMP. The CEMP is discussed in detail in Section 6.1.3 and will include, but not be limited to:

- Mitigation measures for the storage and disposal of groundwater;
- All groundwater extracted will be analysed for PFAS prior to release and/or disposal;
- Mitigation measures to prevent mobilisation of PFAS from impacted soils from entering stormwater or groundwater, through soil storage and disposal measures where relevant; and
- Groundwater monitoring to occur once every month. If after 12 months, monitoring demonstrates that levels are consistently below trigger values, then frequency of monitoring can be reduced.

In addition, groundwater monitoring for PFAS and dissolved metals/metalloids will continue as per the endorsed ASS Management Plan (refer Appendix D) during construction of the BNE Auto Mall once every six months.

Following the implementation of the above mitigation measures, the impact of the Project on groundwater is assessed as:

Groundwater	
Construction phase	Negligible risk
Operational phase	Negligible risk

6.4 Air Quality and Odour

6.4.1 Baseline Conditions

The BNE Auto Mall is located in close proximity to major road corridors such as the Gateway Motorway, Airportlink M7 tunnel, and Moreton Drive as well as some of Brisbane's major industrial precincts which include oil refineries, chemical manufacturers and the Port of Brisbane.

Baseline air quality monitoring was conducted for the BNE Auto Mall prior by PSK Environmental (2017) across three rounds, representing dust deposition over 30 days (± 2 days). Baseline monitoring was conducted at five potentially sensitive receptors within the vicinity of the site. During this monitoring, total insoluble matter exceeded the adopted performance limit of 3.6 g/m^2 per month on two monitoring events at the Kingsford Smith Memorial, although it was noted that vegetation clearing was occurring during this monitoring resulting in high concentrations of combustible matter (PSK Environmental 2017). All other monitoring locations (e.g. Central Parking Area, BAC Services Centre, International Terminal car park, north of Qantas Engineering on Qantas Drive) were below this performance limit.

Caltex Refineries (Qld) Ltd operate three air quality monitoring sites in Wynnum to assess the impact of refinery emissions on nearby sensitive receptors. The oldest of the air quality sites commenced operation in 2004 and the two additional sites were added to the network in March 2014. This air quality monitoring network is located approximately 5 km south east of the Project site. A summary of the monitored pollutant concentrations from Wynnum between March 2017 and February 2018 is presented in Table 17, together with the AEPR, Air NEPM and EPP (Air) guidelines and indicators.

Table 17 Air quality data from Wynnum air quality network (March 2017 to February 2018)

Parameter	AEPR	Air NEPM	EPP (Air)	Averaging period	Maximum pollutant concentration at Wynnum network	Exceedances at Wynnum network
Nitrogen dioxide	0.12 ppm	0.12 ppm	250 µg/m^3 0.12 ppm	1 hour	0.046 ppm (July 2017)	0
Sulfur dioxide	0.20 ppm	0.20 ppm	570 µg/m^3 0.2 ppm	1 hour	0.129 ppm (August 2017)	0
	0.08 ppm	0.08 ppm	230 µg/m^3 0.08 ppm	1 day	0.025 ppm (August 2017)	0
PM_{10}	50 µg/m^3	50 µg/m^3	50 µg/m^3	1 day	57.6 µg/m^3 (September 2017)	2 exceedances: 18 August 2017 14 September 2017
$PM_{2.5}$	-	25 µg/m^3	25 µg/m^3	1 day	20.5 µg/m^3 (September 2017)	0

Source: Department of Environment and Science 2018

According to the results in Table 17, the existing air quality adjacent to the Brisbane Airport at Wynnum is generally considered acceptable and within nominated standards, with the exception of two occasions where the recorded pollutant concentration for PM_{10} exceeded the PM_{10} standard of 50 µg/m^3. It is noted that these exceedances occurred on days with fresh gusty southwest to westerly winds.

6.4.2 Assessment of Impacts

It is anticipated that construction and operation of the BNE Auto Mall will generate minimal air quality impacts. Construction works have the potential to cause dust generation, particularly during any excavation works. Additional traffic generation during operation of the BNE Auto Mall, through increased visitors to the Brisbane Airport, as well as operation of the vehicles within the BNE Auto Mall, also have the potential to cause air quality impacts as well as odour impacts.

6.4.3 Mitigation Measures

The following mitigation measures are proposed to manage potential air quality and odour impacts:

- Dust generated during the construction phase will be controlled through a CEMP to be prepared for these construction works, with measures such as dust suppression techniques and plant maintenance;

- Roads and parking areas will be designed to reduce impermeable surface area where practicable, to reduce heat island impacts and minimise energy use;
- Developers will ensure buildings are responsive to the subtropical climate of the region;
- During use of the performance track (e.g. driver days, events etc), users will be encouraged to adopt the following measures:
  - Avoid vehicles idling when not in use;
  - Stabilisation and regular watering of 4WD circuit to reduce dust generation; and
  - Use new vehicles where practicable, as newer vehicles are generally lower emission than older models.
- Burnouts and similar activities that generate excess smoke will not be permitted.

Following the implementation of the above mitigation measures, the impact of the Project on air quality is assessed as:

Air quality	
Construction phase	Negligible risk
Operational phase	Negligible risk

6.5 Noise and Vibration

Noise sources associated with the Brisbane Airport are regulated principally by the Airports Act and AEPR. The Airports Act permits the making of regulations about certain environmental matters, and also details environmental requirements for both master plans and major development plans. The AEPR defines commercial and sensitive receptors and provides guidelines for excessive noise for a range of noise sources including construction of buildings and road traffic.

Regulation 2.04 of the AEPR defines offensive noise as noise that is:

> *"…generated at a volume, or in a way, or under a circumstance, that in the opinion of an airport environment officer, offensively intrudes on individual, community or commercial amenity."*

To determine whether noise constitutes 'offensive noise', the AEPR (Regulation 2.04) outlines the following considerations:

a) the volume, tonality and impulsive character (if any) of the noise; and

the time of day, and duration, of the noise; and

background noise levels at the time the noise is generated; and

the location, in relation to the source of the noise, of:

sensitive receptors; or

if there is no affected sensitive receptor — commercial receptors; and

the excessive noise guidelines in Schedule 4.

The AEPR further defines a *commercial receptor* and *sensitive receptor* which allows the sensitive and commercial receptors specific to the source of the noise to be identified. Regulation 2.04 states:

> ***commercial receptor*** *means a business operation, whether for profit, or not.*
>
> ***sensitive receptor*** *means:*
>
> *(a) a dwelling; or*
>
> *(b) an impermanent dwelling in a place designed, or reserved, for impermanent dwellings (for example, a caravan park or residential marina); or*
>
> *(c) a hotel, motel or hostel; or*

(d) a child care institution, kindergarten, school, college, university or other educational institution; or

(e) a hospital, medical centre or nursing home; or

(f) a building that is a church or similar place of worship.

In addition to the above, Brisbane City Council's Noise Impact Assessment Planning Scheme Policy (PSP) has published a method for noise impact assessment. Using this method, an Acoustics Assessment Report has been prepared for the construction and operation of the BNE Auto Mall (refer Appendix I). For this assessment, the noise criteria is:

$$dBL_{Aeq,T} = RBL + 3\ dB$$

The PSP also sets out how various noise impacts should be considered when determining the level of noise assessment and any suitable mitigation measures required for new developments.

6.5.1 Baseline Conditions

The Project site is located within an existing high noise environment and is exposed to high levels of daytime, evening and night time ambient noise from a variety of sources, primarily aircraft movements. Ground-based noise sources surrounding the Project site have been identified in the 2014 AES as the following:

- Road traffic and rail;
- Construction and development sites;
- Operation of plant or machinery;
- Operation of alarm or warning systems; and
- Ground-based aircraft operations which can include;
  - Operation of auxiliary power units;
  - Ground based aircraft engine running; and
  - Test-bed running of aircraft engines on ground.

Based on the definitions set out in Regulation 2.04 of the AEPR, the nearest sensitive receptors to the Project site include residential areas at Eagle Farm (2 km south-west) and Hendra (2.4 km south-west), with Nundah, Northgate and Banyo located more than 2 km to the west and north (refer Figure 1). Additionally, a number of receptors have also been identified such as the Kingsford Smith Memorial (95 m north-east) and commercial tenancies located on the surrounding road network.

Baseline noise monitoring has been undertaken at three locations around the Project site between 26 February 2019 and 13 March 2019. The three locations have been selected based on their proximity to the identified sensitive receptors and are to provide a representation of the existing noise levels. The results of the baseline noise monitoring are summarised in Table 18.

Table 18 Summary of measured noise levels by Aurecon

Logger #	Date/ Period	Average Noise Level $dBL_{Aeq,T}$			Rating Background Level dBL_{A90}		
		Daytime 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700	Day 0700 - 1800	Eve. 1800 - 2200	Night 2200 - 0700
#1 94 Lomandra Drive, Brisbane Airport	26/02/19 – 05/03/19	62	60	57	46	43	43

Logger #	Date/ Period	Average Noise Level $dBL_{Aeq,T}$			Rating Background Level dBL_{A90}		
		Daytime 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700	Day 0700 - 1800	Eve. 1800 - 2200	Night 2200 - 0700
#2 Airport conservation area	26/02/19 – 05/03/19	51	50	52	45	45	41
#3 Virginia Soccer Club	05/03/19 – 13/03/19	58	52	49	50	45	41

Additionally, ambient noise level measurements from the following reports were also reviewed to quantify the existing noise environment around the Project site:

- Parallel Runway EIS/Major Development Plan (MDP) (2006)
- PSK Environmental Interim Report (2017)

The measured noise levels at the locations within these reports are summarised in Table 19 and Table 20.

Table 19 Summary of measured noise levels (Parallel Runway EIS/MDP 2006)

Site	Min $dBL_{A90,1hr}$			$dBL_{Aeq,Period}$		
	Daytime 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700	Daytime 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700
St Paul's Theological College (Educational facility)	36	33	30	56	51	44
33 Franklin Street, Nundah (residential property)	44	42	36	57	50	49
17 McBride Road, Pinkenba (residential property)	42	37	34	57	52	51

Table 20 Summary of measured noise levels (PSK Environmental Interim Report 2017)

Location	Dates	dB L_{Aeq}			dB L_{A10}			dB L_{A90}		
		Day 7am – 6pm	Evening 6pm – 10pm	Night 10pm – 7am	Day 7am – 6pm	Evening 6pm – 10pm	Night 10pm – 7am	Day 7am – 6pm	Evening 6pm – 10pm	Night 10pm – 7am
Kingsford Smith Memorial	5/9/17 – 19/9/17	60	55	58	60	56	59	52	48	50
BAC Service Centre	20/9/17 -5/10/17	61	60	60	63	62	62	56	53	52

The results in Table 20 show higher measured noise levels at the Kingsford Smith Memorial and BAC Service Centre compared to the locations in Table 18 and Table 19. It is noted the noise levels are higher in these locations given their location within the Brisbane Airport. For this assessment, noise-sensitive locations have been selected to include the nearest affected receptors and are shown in Figure 27.

Baseline vibration monitoring was also undertaken at Kingsford Smith Memorial by PSK Environmental over 14 days between 7 September 2017 and 25 September 2017. A summary of the vibration results is included in Table 21 below.

Table 21 Baseline vibration monitoring results (PSK Environmental Interim Report 2017)

Monitoring period	Maximum vibration detected (mm/s)	Second highest reading (mm/s)	Average vibration detected (mm/s)
7– 13 September 2017	1.0	0.97	0.12
14 September 2017	6.44	0.75	0.16
19 – 25 September 2017	3.53	1.58	0.12

The maximum vibration result recorded was 6.44 mm/s, which exceeded the set performance criteria of 5.0 mm/s. This exceedance occurred on 14 September 2017 at approximately 3pm for a one-minute period and was reported to be attributed to tampering of the vibration monitoring equipment (PSK Environmental 2017). The average vibration detected was 0.12 mm/s, well below the performance criteria.

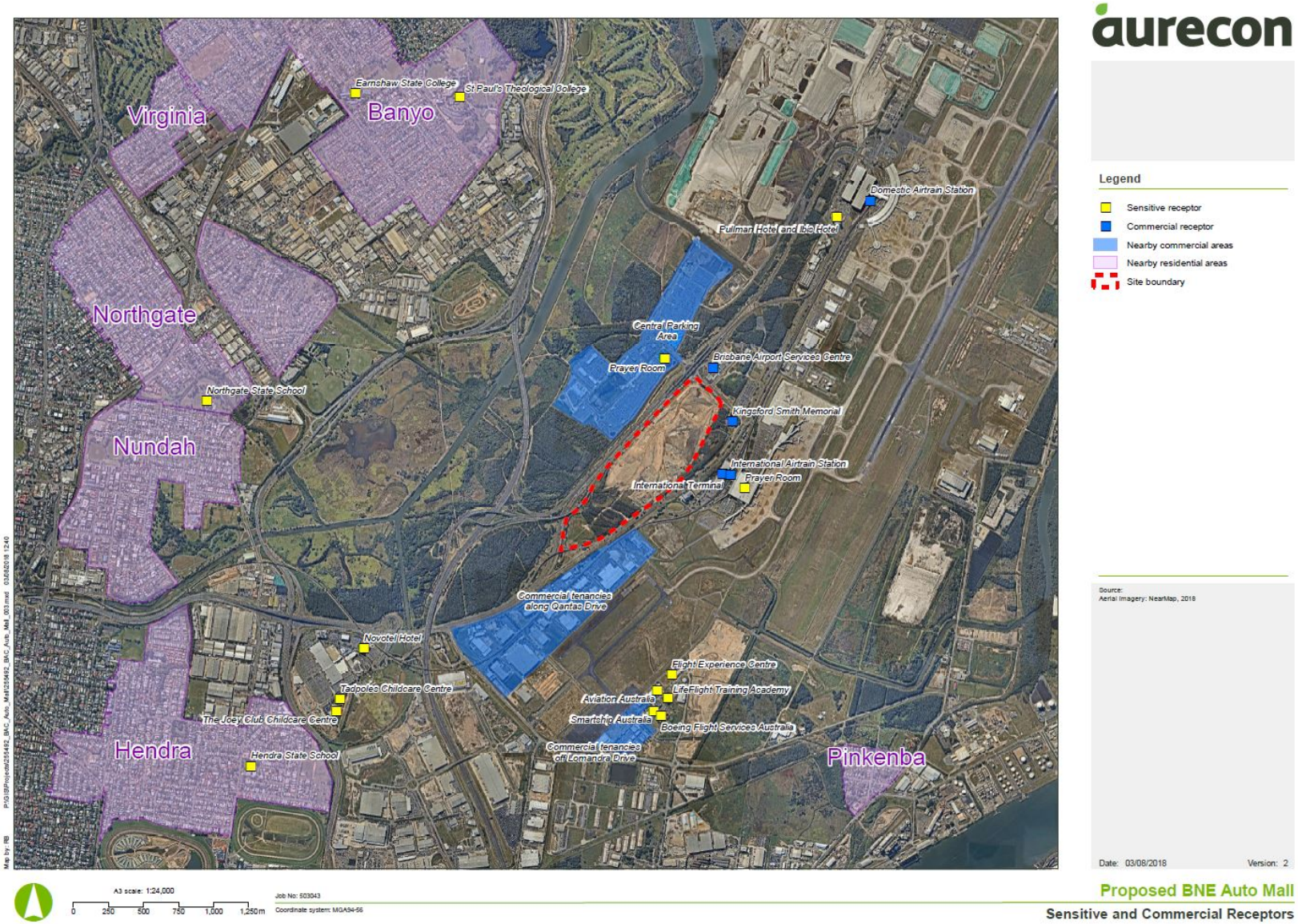


Figure 27 Noise- sensitive locations

6.5.2 Assessment of Impacts

6.5.2.1 Construction

An assessment of construction noise and vibration impacts associated with the initial earthworks phase of the Project (referred to as site preparatory works) was undertaken for the preparation of the EAR (refer Appendix D). The findings of this EAR concluded that nearby residential areas (Eagle Farm, Hendra, Nundah, Northgate and Banyo) are a sufficient distance away from the Project site and will not experience any adverse construction noise and/or vibration impacts. The findings also concluded that potential impacts on the nearest receptors from the site preparatory works would be managed with appropriate mitigation measures.

At the time of writing, the construction methodology for the Project has not been confirmed. The construction phase will involve dealerships, brand experience centres and the performance track. It is assumed that construction will involve excavation, structural works and fit out works, subject to development of a final program.

It is estimated that the total construction duration for the BNE Auto Mall will last a number of weeks/months and any noisy construction activities would be conducted during typical weekday hours between 7 am and 6 pm. With appropriate selection of plant and typical noise mitigation measures, construction noise and vibration from general earth works and typical construction activities are expected to generally comply with the applicable noise and vibration limits at the neighbouring properties.

6.5.2.2 Operation

6.5.2.2.1 Aircraft Noise Exposure Forecast

The BNE Auto Mall is located within the Aircraft Noise Exposure Forecast (ANEF) 20-25 and 25-30 noise contours for aircraft movements from Brisbane Airport. According to AS 2021-2015, the Project site is therefore ‘conditionally acceptable’ for commercial uses (i.e. dealerships and brand experiences centres) and ‘acceptable’ for light industrial uses. As such, aircraft noise from operations at Brisbane Airport is not considered an obstacle to the proposed land uses within the BNE Auto Mall. However, a detailed review of aircraft noise ingress into the proposed buildings will be required to achieve the internal background noise criteria.

6.5.2.2.2 Typical Operational Scenarios

Preliminary noise modelling has been undertaken based on the potential noise sources within the Project site to provide a general understanding of the expected noise impacts, sources and extent of mitigation required. There are nine ‘typical’ scenarios that have been assessed which are associated with day-to-day operations of the BNE Auto Mall as well as potential operational activities for event days. Each of these scenarios are detailed below:

- **Scenario One:** High performance vehicles using the performance track, with six laps within a one hour period (operating hours from 9 am to 10 pm).
- **Scenario Two:** Normal test driving situations (using normal road cars) assuming a maximum of 12 laps within a one hour period. This Scenario aligns with the potential operational activities for driver training days (operating hours from 9 am to 6 pm)
- **Scenario Three:** Scenario One with the addition of six stationary (idling) vehicles at pit-stop locations. This Scenario aligns with the potential operational activities for driver experience days (operating hours from 9 am to 10 pm).
- **Scenario Four:** Scenario One with the addition of two vehicles using the skid pan (operating hours from 9 am to 10 pm).

- **Scenario Five:** Scenario Three with the addition of two vehicles using the skid pan (operating from 9 am to 6 pm).
- **Scenario Six:** High performance vehicles using the performance track, with twelve vehicle laps of the track within a one hour period (operating from 9 am to 10 pm).
- **Scenario Seven:** Scenario Four with the addition of six vehicles per hour using the 4WD test circuit, and six motorbikes per hour using the performance track. This Scenario aligns with the potential operational activities that are anticipated for shared test drive days, 4WD training days and *motorbike test days* (operating from 9 am to 10 pm).
- **Scenario Eight:** Six high performance vehicles on the performance track, completing six laps simultaneously in any one hour period. This Scenarios aligns with the potential operational activities that are anticipated for corporate driving days (operating from 9 am to 6 pm).
- **Scenario Nine:** Six high performance vehicles using the performance track, completing 12 laps in any one hour period. This scenario also includes up to 5,000 spectators, cars idling in the pit stop locations and operation of a PA system (operating from 9 am to 10 pm), as per a major event day and is considered a 'worst-case scenario'.

6.5.2.2.3 Impacts on Sensitive and Commercial Receptors

Based on the 'typical' operational scenarios, a preliminary high-level assessment of potential noise impacts from the BNE Auto Mall was conducted. The assessment involved a comparison between the predicted noise levels of the operational scenarios against the Project specific daytime and evening noise criteria.

For daytime operations (9 am to 6 pm), all 'typical' scenarios are predicted to be in accordance with the daytime local noise criteria with minor exceedances only predicted for the following receptors and scenarios:

- Commercial properties along Qantas Drive (Scenario Nine only)
- Kingsford Smith Memorial (Scenarios Four, Five, Seven and Nine)

For evening operations (6 pm to 10 pm), exceedances are predicted for the following receptors and scenarios:

- Australian Catholic University (Scenario Nine only)
- Commercial properties along Qantas Drive (Scenarios Four, Seven and Nine)
- Hertz Car Rental (Scenarios Four, Seven and Nine)
- Kingsford Smith Memorial (Scenarios Four, Seven and Nine)
- BAC Service Centre (Scenarios Four, Seven and Nine)
- Prayer Room (Service Centre) (Scenarios Four, Seven and Nine)
- Prayer Room (Airport) (Scenario Nine only)

The exceedances for Scenario Nine are related to the operational activities associated with special and/or major event days. As such, these exceedances would occur up to a maximum of two times per year (i.e. bi-annual events). It is also noted the estimated maximum number of people for the special event days is 1,000 spectators, however Scenario Nine has assessed a worst-case scenario with 5,000 spectators, which is considered major events.

The exceedances for Scenario Seven are related to the simultaneous use of the performance track (high performance vehicles and motorbikes), skid pan and 4WD test circuit. It is noted Scenario Seven represents the most intense use of the BNE Auto Mall. It is also important to note these activities may occur in isolation of each other, however, the worst-case scenario has been modelled in this instance.

With respect to the Kingsford Smith Memorial, predicted exceedances, visitors and/or workers on the site are typically not present for extended periods of time (i.e. self-guided tours only) and therefore are unlikely to be exposed to the hour-long predicted noise levels.

It is also noted that exceedances for evening operations for the commercial properties along Qantas Drive, BAC Service Centre and the Prayer Rooms was only 1 dB for a number of the scenarios. Therefore, these exceedances are considered to be negligible and are unlikely to be discernible to visitors and/or workers at the receptor sites.

Based on these results, there are no exceedances beyond the extent of the Brisbane Airport. As such, noisy activities are considered to be heard in the context of what is already a high noise environment and there are no predicted noise level exceedances to surrounding residential areas.

Other noise sources were considered in the assessment including the use of a PA system on the Project site, proposed to be used for emergency use only. The following has been considered in relation to the PA system:

- The design and commissioning should be considered as part of the Operational Noise Management Plan for the facility;
- The detailed design will need to consider the location and directionality / spill of the speakers, and noise limiters, as appropriate; and
- Specification of the PA system is subject to detailed design.
- Further discussion and a detailed assessment of these results is provided in the Acoustic Assessment Report (Appendix I).

6.5.3 Mitigation Measures

6.5.3.1 Construction

It is considered that a Construction Noise and Vibration Management Plan (CNVMP) constitutes the best practicable option to mitigate the construction noise and vibration effects on the adjacent receptors and to minimise disruption to existing airport facilities and operations.

The CNVMP should, as a minimum, identify the following:

- Proposed construction activities and associated noise and vibration levels;
- Days and hours of site operation;
- Identification of affected neighbours;
- Noise mitigation measures;
- Construction noise monitoring requirements;
- Procedures for community liaison (e.g. distribution of site contact information etc.); and
- The CNVMP should adopt mitigation measures outlined in AS2436-2010.

6.5.3.2 Operation

A comprehensive list of proposed noise mitigation measures is included in Appendix E of the Acoustic Assessment Report (refer Appendix I). It is anticipated that a number of best practice mitigation measures are considered appropriate to mitigate potential noise impacts associated with the construction and operation of the BNE Auto Mall including restricting the use of the PA system to emergency situations only, stakeholder engagement with affected receptors (i.e. Australian Catholic University, BAC Service Centre and Qantas Drive businesses) and engineering design strategies such as perimeter bunds and acoustic screening, where necessary.

An Operational Noise Management Plan (refer Appendix I) has been developed for the day-to-day operation and event days associated with the BNE Auto Mall to appropriately manage the potential noise emissions. It is recommended that the Operational Noise Management Plan and 'typical' operational scenarios are reviewed during the commissioning phase and the documents are updated accordingly.

In addition, while racing cars have not been modelled during the scenarios, prior to their use for any special or major events, appropriate noise modelling will be undertaken to ensure sensitive receptors are not adversely impacted. A copy of the noise modelling results will be provided to the Department of Infrastructure, Transport, Regional Development and Communications prior to the special or major events. It should be noted that the CAMS requirements for racing cars require a maximum noise emission limit of 95dB(A) when measured 30m from the track edge.

The acoustic design of the individual buildings within the BNE Auto Mall will consider the high noise environment including the impact of external noise sources and the potential effect of noise generated by the Project (e.g. performance tracks and skid pan) upon surrounding land uses.

Following the implementation of the noise mitigation measures, the impact of the Project on noise and vibration is assessed as:

Noise and vibration	
Construction phase	Negligible risk
Operational phase	Low risk

6.6 Land Use

The planning context for the Project is provided by the Master Plan that provides the basis for planning of aviation activity, landside development, environmental management and transport access in an integrated way.

6.6.1 Baseline Conditions

BNE Auto Mall is proposed on a 51.3 ha undeveloped parcel of land at Brisbane Airport. Brisbane Airport is the premier gateway to Queensland with two major terminals operating 24 hours a day, seven days a week. The Airport operates 24/7 with no restricted hours under the *Trading (Allowable Hours) Act 1990.* One runway currently services 31 airlines with more than 23.2 million passengers each year. Brisbane's second runway is anticipated to open in 2020 and will see an increase in the number of passengers and people within the area. There are currently 480 businesses located at the Airport employing more than 23,000 people. By 2034, this number is expected to exceed to 50,000 employees.

Being situated in close proximity to an increasingly busy runway (with a second runway under construction), the Gateway Motorway and Brisbane Domestic and International Terminals, the Project site is centred within an area that already encompasses land uses that are a preferred destination for transit and gathering of people, with activity all year round.

The day-to-day operation of BNE Auto Mall will be limited to the dealerships operating at a retail level where their primary purpose is to sell new or used cars and the Performance Track for driver training, vehicle engineering, safety testing and development as well as a unique test-driving environment for the motor retailers and public. The performance track will also be used to host a range of events including regular (drive days, driver experience days and 4WD training days), semi-regular (corporate events, motorbike test days and driver training days) and bi-annual (special events) events.

6.6.2 Assessment of Impacts

The construction and operation of land uses within the BNE Auto Mall have the potential to result in direct and permanent impacts to the Project site and surrounding area. Potential impacts associated with the Performance Track and dealerships are related to:

- Change in land use
  - Development activity
  - Social impact
  - Economic activity
- Accessibility
  - Impacts on road network
  - Impacts on parking
- Impacts on local amenity
- An assessment of these impacts in relation to the land use is provided below.

6.6.2.1 Change in land use

The performance track, dealerships and associated roads and services form part of this MDP. The permanent change in land use from undeveloped land to the proposed performance track and dealerships will generate significant development activity on currently vacant land within the BNE Auto Mall and the wider Airport precinct.

The BNE Auto Mall is anticipated to result in advantageous economic impacts and provide for a facility that is currently not available in South East Queensland. The change in land use is expected to see an increase in visitors to Brisbane and see stakeholder support which may not otherwise be available.

The BNE Auto Mall has also considered potential social impacts of day-to-day operations as well as event days such as traffic movements on the external road network. An assessment of these is provided in Section 5.1.

6.6.2.2 Accessibility

Accessibility is often associated with infrastructure-based measures which describe the level of service of the road network for people accessing an area. Further, the degree to which the network enables one to reach the necessary facilities to carry out the desired activities of the land use should also be considered in terms of accessibility.

The BNE Auto Mall has considered accessibility in terms of the function and operation of the external road network. An assessment is provided in Section 5.1.

6.6.2.3 Impacts on local amenity

The BNE Auto Mall has the potential to enhance local amenity by developing previously unused land to incorporate land uses which are consistent with the Airport Master Plan. The Project site will be transformed into a precinct that aims to be recognised as a leader in management of energy, water, waste, noise and biodiversity. BNE Auto Mall has the potential to enhance the scenic amenity of the Airport using a variety of colours, textures, materials and landscaping.

While the Project is located 2 km from the closest residential area, the potential impacts to local amenity such as air quality, odour and noise have been considered in this MDP. Refer to Section 6.4 (Air Quality and Odour) and Section 6.5 (Noise and Vibration).

6.6.3 Mitigation Measures

In designing the BNE Auto Mall, land use impacts on the immediate and surrounding areas will be avoided or minimised, where possible. Where impacts cannot be avoided, the extent of impacts will be carefully managed and mitigated. The following outlines the mitigation measures proposed to be applied to reduce and manage the land use impacts:

6.6.3.1 Change in land use

The Project site is a 51.3 ha undeveloped parcel of land that has been earmarked for future development in accordance with the Airport Master Plan. BNE Auto Mall has been deliberately staged (as per Section 2.7) to manage development activity at the Airport and ensure development is supported by appropriate infrastructure and maintains amenity for passengers and people accessing the area.

BNE Auto Mall will operate as a precinct that includes the performance track, dealerships and brand experience centres being centrally managed (on-site) by an experienced operator who will provide a consistent support service and manage the varying needs of on-site tenants as well as the public.

An Events Management Plan will be developed for the regular and semi-regular events. A tailored Event Management Plan will also be prepared for each special and major event. While it is anticipated that the special and major events will be held on singular days, there may be occasions where the events are run over the course of up to three days (ie Friday, Saturday and Sunday). In these instances, the Event Management Plan will ensure that any potential impacts on sensitive receptors are appropriately managed. The Events Management Plan will consider matters such as a communication strategy (communications with the local community and promotion plan), venue management plan including parking management, emergency and safety management plan, security, alcohol management, waste and noise. A copy of the Events Management Plan is provided in Appendix B.

6.6.3.2 Accessibility

The land use impacts on accessibility has been considered in Section 5.1 (Ground Transport) of this Major Development Plan from an infrastructure-based perspective as well as a person's ability to access the area and carry out their desired activities. Section 5.1.3 discusses mitigation measures in detail for the construction and operational phases of the BNE Auto Mall.

Further, the Events Management Plan to be developed for each special and major event will consider specific impacts to accessibility and implement management strategies for the impact to the local road network, parking, pedestrian management and safety.

6.6.3.3 Impacts on local amenity

While the BNE Auto Mall will positively contribute to the scenic amenity of Brisbane Airport, an assessment of the potential impacts of the proposed land uses requires mitigation measures to be implemented for namely dust and noise. The BNE Auto Mall will operate under a Noise Management Plan (refer Appendix I) that aims to avoid, manage and mitigate any adverse impacts of the proposed land uses.

Further, special and major events will prepare a comprehensive Event Management Plan that considers the potential amenity impacts of each event independently.

A detailed discussion relating to the mitigation measures to be implemented for potential land use impacts on dust and noise are further discussion in Section 6.4 and Section 6.5.

Following the implementation of the above mitigation measures, the impact of the Project on land use is assessed as:

Land use	
Construction phase	Negligible risk
Operational phase	Low risk

6.7 Landscape

The Landscape Setting Strategy (LSS) is the primary reference for all landscape initiatives at the Brisbane Airport. The LSS sets out the intent and guidance for the landscape, supported by three (3) goals and consisting of four (4) key elements. The goals of the LSS are:

- Provides a functioning ecological system that supports the operational needs of Brisbane Airport;
- Establishes a natural green frame for development; and
- Creates memorable landscape experiences that are distinctive of South East Queensland.

The LSS sets out Thematic Landscape Areas that are spatially defined to ensure landscaping and development across the Airport provides a continuity of design approach and landscape narrative. The Airport Drive West precinct has been identified within the 'BNE Destination's and one of two regional level 'BNE Gateways'. The landscape values and intents are defined under the LSS and will be used to guide the site treatment implemented as part of the proposed BNE Auto Mall development.

6.7.1 Baseline Conditions

The LSS intent of landscaping within the 'BNE Destinations' theme celebrates the distinctive subtropical character of South East Queensland and enriches the visitors experience through a designed sequence of views and vistas. The BNE Auto Mall is to provide a consistent and simple palette of material to be used to convey a strong sense of unity and cohesion throughout the development. Planting design and species choice is to maximise shade and tree cover.

'BNE Gateways' are significant opportunities for gateways at a range of scales which can be developed to reflect BAC values and provide a strong engagement with the wider community. The LSS recognises that a gateway opportunity could be investigated at two sites which would provide a regional address and marker.

Under the LSS, the BNE Auto Mall requires consideration of six (6) elements as part of the destination objective including: vegetation, water, hard surfaces, development interfaces and edges, visual environment and furniture. The BNE Auto Mall has considered each of the six (6) elements through the following responses:

- The streetscapes offer the opportunity to deliver on vegetation. Planting to be in accordance with the LSS and irrigated with passive watering via rain gardens as well as irrigation;
- Footpaths are located immediately adjacent to street trees. Pavement options were not covered in this plan;
- Ensures the integrated infrastructure outcomes can support the development interfaces and edges. This will require attention to detail in future phases of the development;
- Deliver excellence in sustainable water management; and
- Considers potential location for covered walkways and vines to create shade, colour and vertical greenery.

The LSS requires a functional ecological landscape that does not provide habitat for high risk wildlife, such as birds and flying foxes, in accordance with NASF Guideline C. Considerations from the LSS that will be incorporated into design of the Project include:

- Select trees that do not produce the type of flowers, fruits and seeds known to be sought by birds and/or flying foxes and avoid bird roosting potential;
- Maintain grass and groundcover planting at a length which deters birds;
- Minimise available food from outdoor dining and rubbish bins;
- Drains and stormwater treatment devices to be designed with low risk vegetation which provides stormwater treatment but doesn't attract birds; and
- The size and design of open water storages should deter water birds by ensuring they are discouraged from landing.

The BNE Auto Mall Development Plan includes landscape outcomes for the site to deliver a high level of visual amenity for tenants and visitors. Landscape outcomes include vegetated stormwater management swales positioned at regular intervals between lots for site drainage. These swales are to be heavily vegetated with plant and tree species defined in the BAC LSS.

6.7.2 Assessment of Impacts

The proposed BNE Auto Mall development involves the productive use of land that is currently undeveloped. An improved landscape outcome is expected with the construction of the Project as it is proposed to include landscaping of the public and private realm and the public pedestrian pathways, consistent with those initiatives set out within the LSS.

Therefore, the impact of the BNE Auto Mall on Airport Drive West's landscape character is assessed as:

Landscape	
Construction phase	Negligible risk
Operational phase	Negligible risk

6.7.3 Mitigation Measures

The Project will incorporate landscaping treatments that will be designed and planted in accordance with the outcomes and species sought by BAC's LSS. Specific aspects of the landscaping, planting and species composition will be resolved at the detailed design documentation stage.

6.8 Social and Economic Issues

This section outlines the economic and social impacts of the Auto Mall during construction and operation.

6.8.1 Baseline Conditions

Brisbane Airport is the largest capacity city airport in Australia by land, covering an area of 2,700 ha, featuring the Domestic and International Terminals, carparks, freight and logistics offices and warehouses and the Skygate precinct (Urbis 2016). Brisbane Airport economic contribution to the State and the City of Brisbane is $4 billion annually. The site is currently a 51.3 ha parcel of undeveloped land that is currently undergoing land development works. The BNE Auto Mall will deliver a world class all-encompassing auto retail precinct, the first of its kind in Australia.

Under the Master Plan, the Project site is located within the Mixed Use Zone to enable a level of economic and social activity to serve the intended mix of visitors, workers and residents. Intended uses of the precinct include performance track, outdoor sales, showroom, major sport and recreation and entertainment facilities.

Future uses of the precinct could include hotel, conference centre and commercial offices. Investment negotiations will be ongoing with long term tenant leases throughout development.

6.8.1.1 Early works

The site is currently undergoing site preparatory works (e.g. earthworks, surcharging) until mid-2021.

6.8.1.2 Construction

Construction of the Auto Mall will be spread across three stages:

- Stage 1 (including performance track) – late 2019 to mid-2021;
- Stage 2 – 2020 to 2023; and
- Stage 3 – 2020 to 2026/29.

6.8.2 Regional Economic Profile

6.8.2.1 Population

The proposed Auto Mall facility manager will conduct driver training at all levels from L-Platers, P-Platers, corporate and fleet as well as race car tuition onsite.

The majority of the regional population will be eligible to use the Auto Mall. Approximately 75% of the Greater Brisbane population and 78% of the Queensland population are over the age of 18 (refer Table 22). There are a further 354,851 people aged between 12 to 17 years, who will be eligible for L-Plates from 17 years old (refer Table 22).

Table 22 Population profile, 2016

Age groups, 2016, total persons (Usual residence)						
	Greater Brisbane		Queensland		Australia	
Age group (years)	**Number**	**%**	**Number**	**%**	**Number**	**%**
Babies and pre-schoolers (0 to 4)	147,903	6.5	296,466	6.3	1,464,776	6.3
Primary schoolers (5 to 11)	212,773	9.4	439,933	9.4	2,074,726	8.9
Secondary schoolers (12 to 17)	168,703	7.4	354,851	7.5	1,668,521	7.1
Tertiary education and independence (18 to 24)	232,345	10.2	434,597	9.2	2,144,976	9.2
Young workforce (25 to 34)	343,233	15.1	646,694	13.8	3,368,455	14.4
Parents and homebuilders (35 to 49)	473,798	20.9	951,099	20.2	4,726,387	20.2
Older workers and pre-retirees (50 to 59)	273,712	12.1	600,919	12.8	2,977,874	12.7
Empty nesters and retirees (60 to 69)	217,389	9.6	502,880	10.7	2,488,393	10.6
Seniors (70 to 84)	162,594	7.2	390,225	8.3	2,000,923	8.6
Elderly aged (85 and over)	38,357	1.7	85,528	1.8	486,847	2.1
Totals	**2,270,807**	**100.0**	**4,703,192**	**100.0**	**23,401,878**	**100.0**

Source: Australian Bureau of Statistics, Census of Population and Housing 2011 and 2016. Compiled and presented by .id, the population experts.

Employment Profile

In 2016, 1,073,781 people living in Greater Brisbane and 2,136,452 people living in Queensland were employed, of which 63% worked full-time and 35% part-time (Greater Brisbane) and 62% worked full-time and 36% part-time (Queensland). Greater Brisbane has a 7.4% unemployment rate with Queensland at 7.6%.

Table 23 highlights the top 10 employment sectors across Greater Brisbane and Queensland. The Auto Mall construction and operation will complement the existing employment workforce across retail trade, construction and professional and technical services.

Table 23 Employment industry sectors in Greater Brisbane and Queensland, 2016

Industry sector of employment, 2016, employed persons (Usual residence)			
Industry sector – Top 10	**Greater Brisbane Number**	**Greater Brisbane %**	**Queensland %**
Health Care and Social Assistance	141,121	13.1	13.0
Retail Trade	102,073	9.5	9.9
Education and Training	98,667	9.2	9.0
Construction	92,559	8.6	9.0
Professional, Scientific and Technical Services	84,646	7.9	6.3
Public Administration and Safety	76,123	7.1	6.6
Manufacturing	70,096	6.5	6.0
Accommodation and Food Services	69,836	6.5	7.3
Transport, Postal and Warehousing	60,714	5.7	5.1
Inadequately described or not stated	46,174	4.3	4.3

Source: Australian Bureau of Statistics, Census of Population and Housing 2016. Compiled and presented by .id, the population experts.

The predominant occupations across Greater Brisbane are Professionals, Clerical and Administrative Workers, Technicians and Trade Workers, and Managers, as illustrated in Figure 28.

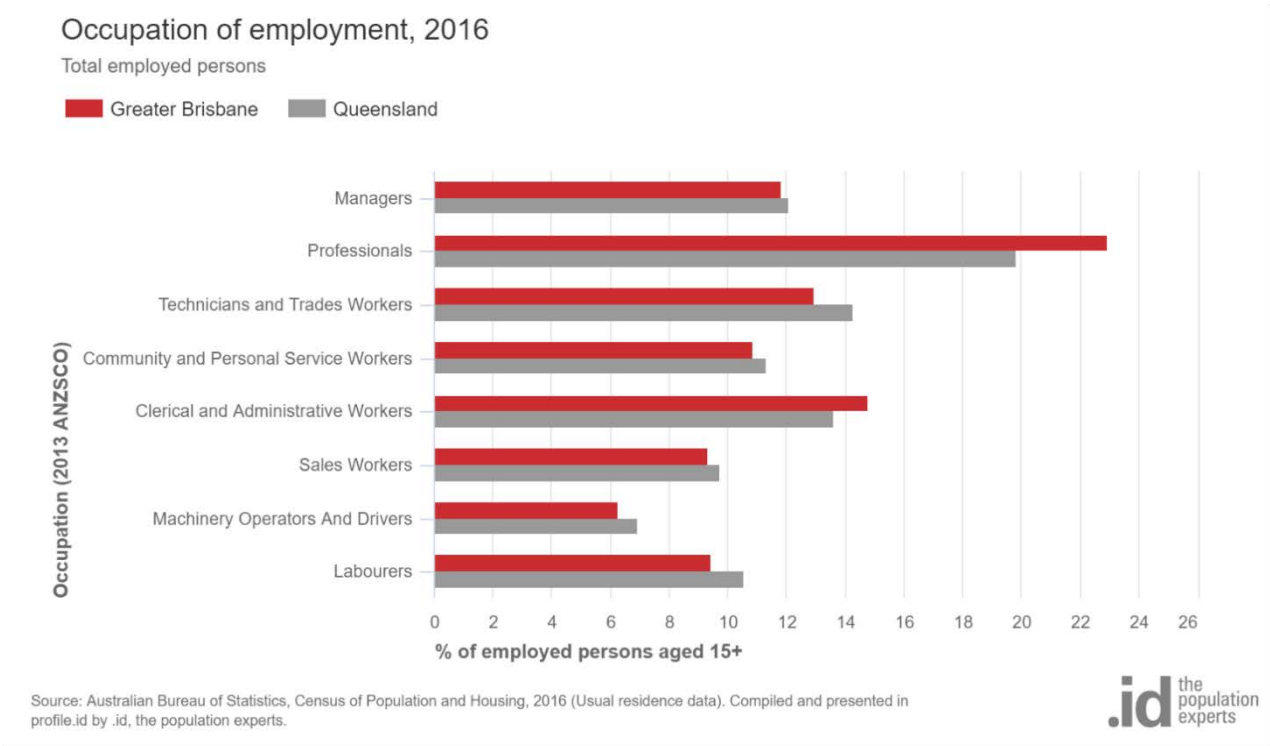


Figure 28 Occupation split in Brisbane and Queensland, 2016

6.8.3 Motoring Profile and Economic Horizon

Since 2013 passenger vehicle ownership has increased by 10% across Australia and Queensland. The graph below in Figure 29 outlines passenger vehicle ownership across Australia. Queensland has 20% (2.5 million) of the total passenger vehicle ownership, followed by Victoria at 27% (over 3.5 million) and New South Wales has the majority 30% (over 4 million).

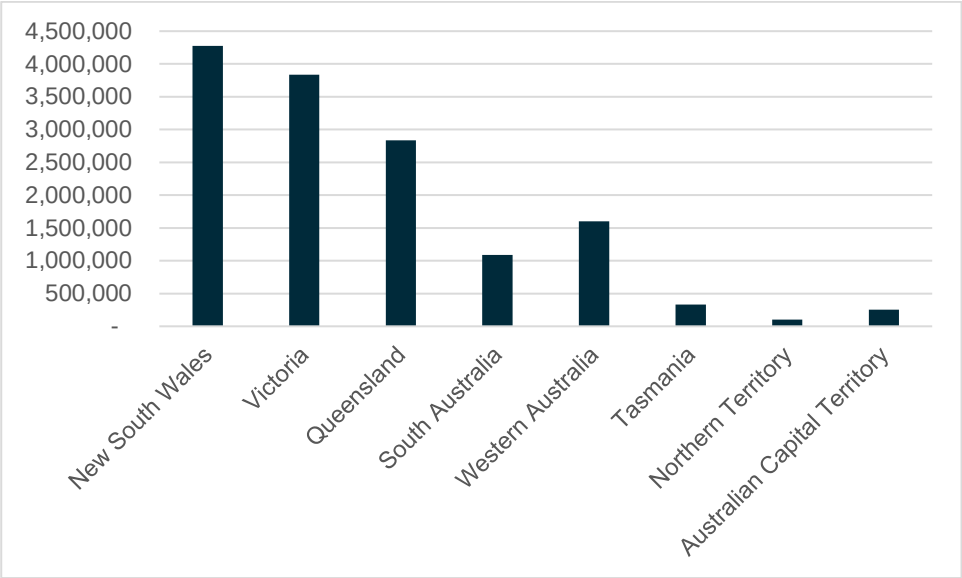


Figure 29 Passenger Vehicles - Motor Vehicles on Register July 2018

Source: ABS 93090DO001_2018 Motor Vehicle Census, Australia, 2018

From 2018, there are over 2.8 million Toyota vehicles registered in Australia. The top 30 car makes are shown in Figure 30 below.

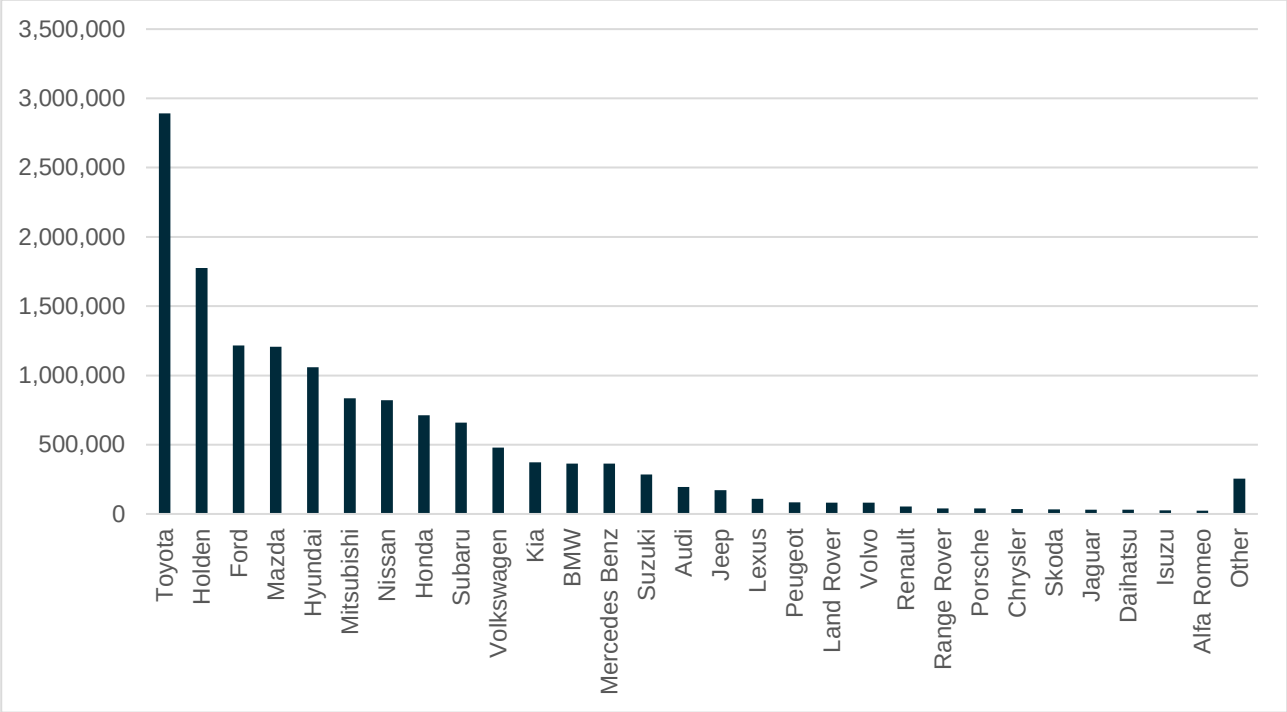


Figure 30 Top 30 passenger vehicles makes, 2018

Source: ABS 93090DO001_2018 Motor Vehicle Census, Australia, 2018

Within the top 30 car makes, there has been significant growth in luxury car ownership in Australia over the last 5 years. Audi has seen an 83% increase in ownership and Porsche a 64% increase from 2013 to 2018, as shown below Table 24.

Table 24 Luxury car ownership growth between 2013 to 2018

Car type	Percentage change between 2013/18 (%)	2018	2013
Audi	83%	195,801	107,176
BMW	31%	364,352	278,139
Jaguar	17%	30,903	26,389
Mercedes Benz	44%	362,796	251,450
Porsche	64%	40,061	24,418
Range Rover	102%	40,820	20,223

However, in economic terms, luxury cars are a luxury good for Australian consumers that is affected by income and external economic factors, such as consumer confidence in spending. Recent analysis by the Commonwealth Bank *CommSec Luxury Vehicle index* collating data from the Federal Chamber of Automotive Industries **suggests luxury car sales have fallen by 8.9% last year** (Business Insider Australia 2019).

The manufacturers included in the Commsec index are broader than the ABS data and include makes such as Aston Martin, Audi, BMW, Bentley, Ferrari, Hummer, Jaguar, Lamborghini, Lexus, Lotus, McLaren, Maserati, Maybach, Mercedes-Benz, Morgan, Porsche and Rolls Royce.

This downturn coincides with a decline in Australian home prices during the same period. Sales of luxury vehicles have tracked movements in home prices over time. The negative wealth effect from falling property prices, along with a weaker Australian dollar and stability in interest rate, are some of the likely factors to explain the fall in luxury car sales in recent years.

6.8.4 Luxury Car Tax

The luxury car tax was introduced by the Federal Government in 2000, in conjunction with the removal of sales tax and the introduction of the Goods and Services Tax. The tax is imposed at a rate of 33% on the purchase price of a car above the threshold of $66,331, or $75,526 (2018/19) (Australian Government 2019) for fuel-efficient vehicles that consume less than 7.0L/100km. The tax applies to new and used cars (less than two years old).

Two examples of the impact of the luxury car tax are (Which Car 2013):

- An additional $2,100 to the price of an $80,000 vehicle, with any optional accessories fitted counting toward the amount of tax levied; and
- $236,000 to the price of a $1.1 million recommended retail price for a Rolls-Royce Phantom.

The tax will be a financial and economic factor for consumers considering purchasing new or used luxury cards from the Auto Mall.

6.8.5 Economic Impacts (employment, output and income)

The Auto Mall will generate jobs during the construction and operation phases, which will require a variety of skills and services.

BAC is investing $85 million for the early works and Stage 1 (including bulk earthworks and precinct civil work for estate roads and services) and development of the performance track.

The total development cost is estimated between $300 to $500 million over 10 years, depending on the type of investment by future tenants. However, most of the additional scope, commitments and remaining investment cost estimates are based on long term ground leases in Stage 2 and Stage 3. Negotiations and planning with tenants will determine the future investment scope.

6.8.5.1 Construction

Auto Mall construction will have positive employment impacts on the local and regional economy and provide economic growth and income generation into the region and State. The employment, output/growth and income estimated to be generated from the initial $85 million investment is outlined below in Table 25:

Table 25 Economic impacts of initial $85 million investment

Early works and Stage 1 development - $85M investment				
	Direct	Indirect	Total	Unit
Employment	261	753	1,014	Number of FTEs
Output / Growth	129	215	344	$M
Income generated	38	57	95	$M

Note – The multipliers are calculated using ABS Input Output table for Queensland 2016/17. Macro-economic impacts are generated based on an appropriate mix of industry clarifications required for Early Works and Stage 1. Industry classifications have been split between; 87.5% Heavy and Civil Engineering Construction, 10% Non-residential property operators and 2.5% Professional Services.

As outlined above, the total development cost for the Auto Mall could range between $300 to $500 million once fully developed. Table 26 below outlines an estimate of the total economic impact from the completion of the development, including industries such as a hotel, conference centre and commercial offices in the precinct.

Table 26 Potential economic impacts from the full development - $300 million investment

Full development up to Stage 3 - $300 million investment[1]				
	Direct	Indirect	**Total[2]**	**Unit**
Employment	1,116	2,555	3,671	Number of FTEs
Output / Growth	454	729	1,183	$M
Income generated	120	202	322	$M

Table notes:

1. The multipliers are calculated using ABS Input Output table for Queensland 2016/17. Macro-economic impacts are generated based on an appropriate mix of industry clarifications required to complete the full development. Industry classifications have been split between; 70% Heavy and Civil Engineering Construction, 30% additional industries from Motor Vehicles and Parts, Retail Trade, Accommodation, Food and Beverage Services, Rental and Hiring Services (except Real Estate) and Professional Services.
2. This is the total impact (eg employment, income etc) of the various construction stages (which may continue for a number of years) and not annual estimates

The $300 million estimated total investment cost for the Auto Mall redevelopment could add $1.1 billion output/growth (total, direct and indirect) into the Queensland Economy and generate $322 million in income (total, direct and indirect).

The construction employment and skills required for the project align with the current employment profile in Greater Brisbane and Queensland in industries such as construction and professional and technical services.

The Auto Mall could source local and regional construction labour for all parts of the development, as the skills are directly relevant from existing infrastructure projects across the State including residential, transport and commercial developments.

6.8.5.2 Operational

The BNE Auto Mall has the potential to operate seven days a week offering a variety of experiences and opportunities to both the visiting public and tenants, as discussed in Section 2.4.

Following completion of the proposed development, commercial opportunities are expected to create significant numbers of direct employment opportunities. Current estimates indicate that **BNE Auto Mall will accommodate over 3,000 employees when fully developed and operational.**

The employment industries and skills required to support the operation of the Auto Mall align with the current employment profile in Greater Brisbane and Queensland in industries such as retail trade, professional, scientific and technical services, and food services.

The Auto Mall is also forecast to support the local economy through increase in car sales. The potential share of Brisbane sales that could be captured by the Auto Mall has been estimated based on the current number of dealerships in Brisbane. It has been assumed that the Auto Mall would achieve 10% higher than a fair market share of sales due to competitive advantage.

Urbis (2016) estimates the passenger car sales-based assumptions in Table 27, which will ultimately increase economic output and income for the region and state:

Table 27 Passenger car sale visitation assumptions

Variable	Assumption	Basis
Market Share of Relevant Brisbane Car Sales	Fair share + 10% uplift	Current number of relevant dealerships in Brisbane
Ratio of Used Car Sales to New Car Sales	1:1	National Automotive Dealers Association

Variable	Assumption	Basis
Start-up Period	50% of achievable sales in Year 1 75% in Year 2 Urbis 100% from Year 3	Urbis estimate
Growth in Sales Volume 0.9% - 1.2% per annum	Forecast Brisbane Population	Growth – QGSO
Visits per Sale	2.5 visits	Urbis estimate
Persons per Visit	1.5 persons	Urbis estimate

Under these assumptions, it is forecast that the Auto Mall will achieve visitation of approximately 19,750 visits in 2021, comprising 9,050 visits for new passenger car purchases, 9,050 visits for used passenger car purchases, and 1,650 visits for new and used commercial car purchases.

This rate of visitation is projected to increase with the growth in Brisbane's population, and the completion of Stages 2 and 3 of the Auto Mall, to reach a total of 53,000 visits in 2026 and 68,000 visits in 2031. Visitation will generate direct and indirect employment, growth and income for the region.

6.8.5.3 Operational employment competition

Brisbane already has a well-developed new a used car market, for example the Moorooka Magic Mile that has formed a natural agglomeration of car dealerships. There are numerous existing luxury car dealerships within Brisbane and Queensland including Aston Martin Gold Coast, Lamborghini Brisbane Fortitude Valley and Ferrari Brisbane Newstead.

The Auto Mall has secured two tenants, AP Eagers and Sci-Fleet who represent a wide range of car manufacturers, and will seek additional tenants as the precinct develops. The nearest comparable race track is the Queensland Lakeside Park Raceway approximately 33 km from the BNE Auto Mall and the Queensland Raceway, approximately 55 km away. However, both these tracks service traditional motor sport and performance bike racing.

The Auto Mall will provide a unique opportunity for customers and it is expected to revolutionise the way people buy, experience, appreciate and interact with vehicles.

At this stage, **the economic impact on the development has been rated positive at a low-medium impact**, depending on the types of further investment into the precinct. There is already well-developed employment and car industries around Brisbane and Queensland, therefore we estimate the Auto Mall will generate low-medium new economic activity, but it will enhance the existing industry.

The potential future agglomeration effect of the precinct on additional development in and around the Airport could lead to a positive high impact on the local and regional economy. This initial development will be a catalyst for future development around the airport.

6.8.5.4 Other Economic Impacts

6.8.5.4.1 Tourism

Apart from employment, the other main economic benefit from the BNE Auto Mall will be tourism. The precinct is uniquely positioned to provide easy, fast access from the Airport which already serves 83 destinations (51 domestic and 32 international) (BAC 2018) along with easy road access for local and regional tourism.

The Queensland Tourism Transport Strategy 2016-2020 (2018 update) outlines the importance of a well-connected, multi-modal transport network supported by quality information systems is essential to making Queensland's wide variety of experiences accessible to visitors. This in turn enables and encourages greater dispersal of tourism, generating business and employment growth.

Queensland's Tourism industry is worth $25 billion and supports 217,000 jobs or 1 in 10 Queensland jobs (State Tourism Satellite Accounts 2016-17). The Auto Mall has the potential to further contribute to tourism growth and can adapt to the local market and consumer needs, through the staged development.

Urbis (2016) estimates visitor numbers at:

- Total Core Visitation to the Auto Mall is estimated at approximately 617,750 visits in 2021, increasing to 1,418,800 visits in 2026, and reaching 1,621,900 visits by 2031
- Day trip visitors account for the largest share of core visitation across the entire study period (74% in 2021, 56% in 2026, and 54% in 2031), followed by servicing customers (11% in 2021, 14% in 2026, and 19% in 2031).
- While Auto Mall employees (excluding commercial office employees) are estimated to also account for the second-largest share of core visitation in 2021 (11%), events and function centre guests are forecast to overtake this segment in 2026, representing 13% and 12% of core visitation in 2026 and 2031 respectively.

The visitor growth forecasts are shown below in Figure 31. It should be noted these growth projections encompass all potential future development within the BNE Auto Mall such as a hotel and conference centre, which do not form part of this MDP. The staged development approach to the Auto Mall will influence the types of visitor and growth, which will ultimately affect the total economic contribution of tourism.

Potential tourism sectors in Greater Brisbane and Queensland to benefit from the Auto Mall include:

- Accommodation (overnight visitors);
- Food and beverage; and
- Retail trade.

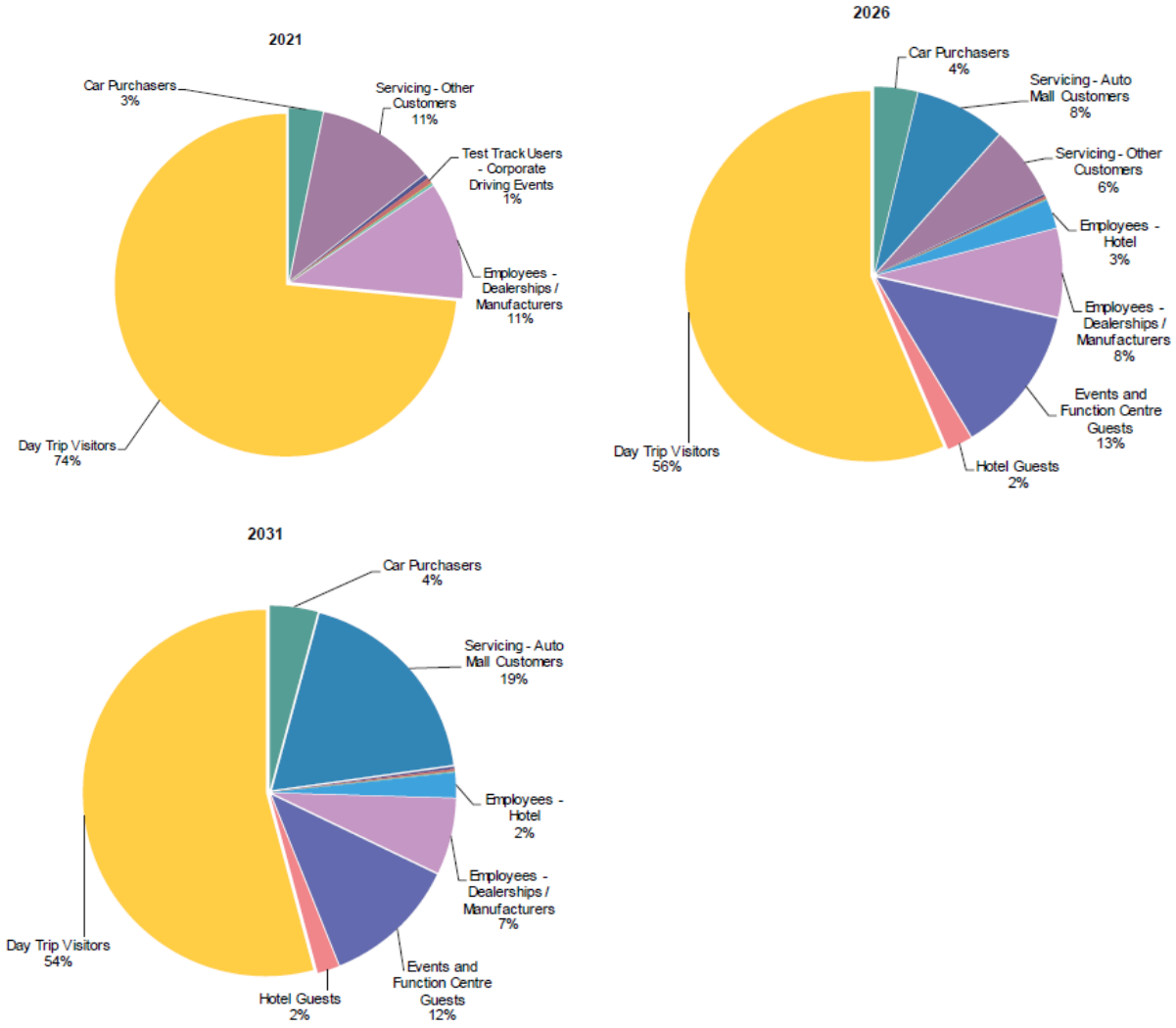


Figure 31 Auto Mall visitation growth projections

Source: Urbis, Sale and Visitation Forecasts, BNE Auto Mall Visitation Estimates, 2016

6.8.5.5 Economic downturns

As outlined above, the Luxury Car tax will impact customers wishing to purchase new or used (up to two years old), which puts an economic barrier for some consumers and impacts the available customer market. The Auto Mall precinct full development will diversify the offerings to consumers for example variety of car makes and models along with the performance track and events.

This will help to protect the Auto Mall from consumer spending downturns on large ticket items such as luxury vehicles.

6.8.6 Social Impacts

During construction and operation, it is noted the BNE Auto Mall will create environmental and social impacts to the community relating to traffic, air quality, noise and vibration. However, the site located within the airport precinct and is not near residential dwelling. As such, these impacts are expected to be negligible to surrounding uses and the proposed mitigation measures are detailed in Sections 5.1, 6.4 and 6.5 respectively.

Post construction, the Auto Mall is expected to create a range of positive social impacts (rated low), outlined below in Table 28.

Table 28 Social impacts[1]

Social impact	Description
Increase quality of living environment	Access to leisure and recreational facilities
Increase in health and social wellbeing	Increase in participation in events including exhibition and conference activities, which could contribute to positive physical and mental health

6.8.7 Stakeholder Consultation

In accordance with Section 92 of the Airports Act, the MDP has been publicly advertised for a period of 60 business days and the following stakeholders were consulted during the public advertising period:

- Civil Aviation Safety Authority (CASA);
- Airservices Australia;
- Commonwealth Department of Infrastructure, Transport, Regional Development and Communications;
- Brisbane City Council; and
- Queensland Department of Infrastructure, Local Government and Planning.

Additional stakeholders who will be impacted by the Auto Mall are:

- New and used car dealerships in Greater Brisbane;
- Lakeside Park Raceway;
- Queensland Raceway;
- Local residents and business owners within around 2 km of Brisbane Airport; and
- Wider community.

6.8.8 Summary

As discussed, the BNE Auto Mall precinct has been designed as a world-class destination for the automotive industry, buyers of new and used cars as well as the general public and motoring enthusiasts. The development is expected to attract significant visitation and generate substantial vehicle sales.

As such, the impact of the BNE Auto Mall on social and economic issues is assessed as:

Type of Economic impact	
Construction phase	Positive, low impact
Operational phase	Positive, low to medium impact

Type of Social impact	
Construction phase	Negligible, low impact
Operational phase	Positive, low impact

[1] Based on the Building Queensland, Social Impacts Evaluation

6.9 Cultural Heritage

The *Queensland Heritage Act 1992* provides for the conservation of Queensland's cultural heritage for the benefit of the community and future generations. The Queensland Heritage Register provides a list of places of cultural heritage significance to Queensland that are protected and managed in accordance with the *Queensland Heritage Act 1992* for present and future generations.

6.9.1 Baseline Conditions

The 2014 AES identifies known indigenous and non-indigenous heritages sites on Airport land. There are no known heritage sites identified within the Project site.

While the site is identified as having little to no heritage value, it has the potential to contain items or sites that may be unearthed during construction. Section 6.9.3 details mitigation measures to avoid/minimise disturbance of cultural heritage.

Under Table 13.5 of the AES, the Kingsford Smith Memorial is identified as a non-indigenous heritage site. The Kingsford Smith Memorial (the Memorial), which contains the Southern Cross Aircraft, is located 95 m from the site towards the eastern corner. The Memorial is potentially significant at a State or Commonwealth level for its historic significance, rarity, aesthetics, technical achievements and associative values, however, it is not currently listed on any statutory heritage register. It is noted, however that building sealing, filter maintenance and other building improvement were undertaken on the Kingsford Smith Memorial prior to the land development works (Phase 1). Dust and vibration monitoring have been ongoing since the commencement of the land development works (Phase 1) in September 2017.

The site is also located 100 m from the Squadron 460 Memorial, that has some local heritage value, although it is not listed on any statutory heritage register nor is it identified under the AES.

6.9.2 Assessment of Impacts

The first phase of preparatory works involves the clearing, filling and surcharging of the site. The EAR identified potential heritage sites/places within the site may include survey trees, remnant fence lines and historic drains and culverts. However, it was considered there is limited potential for Project works to impact on cultural heritage within the site.

Consideration has been given to the potential for emissions associated with Project works, such as vibration and dust, to impact on the Kingsford Smith Memorial. Previous projects undertaken near the Memorial, including the current earthworks at the BNE Auto Mall and the Northern Access Road Project (which involved pile driving in association with construction of the Nancy Bird Way bridge) have not resulted in any impacts from dust or vibration or complaints relating to the heritage values associated with the Memorial. As such, it is considered that construction and operation of the BNE Auto Mall will not adversely impact the Kingsford Smith Memorial.

6.9.3 Mitigation Measures

The following mitigation measures are proposed to manage the impact of the Project on cultural heritage:

- Ensure all staff have completed a site induction, including:
  - Cultural heritage awareness training;
  - Familiarisation material to identify a cultural heritage find;
  - Stop Work Procedure under the Heritage Management Plan; and
  - Process for collection, transport and storage of any cultural heritage finds; and
- Implement the Stop Work Procedure and ensure no impact is sustained to cultural heritage.

Should any vibration inducing works occur within 200 m of the Kingsford Smith Memorial, and if a validated compliant is received regarding vibration, vibration monitoring shall be undertaken to ensure vibration levels are kept below 5 mm/s in consultation with the BAC Environmental Advisor.

Following the implementation of the above mitigation measures, the impact of the Project on cultural heritage is assessed as:

Cultural heritage	
Construction phase	Negligible risk
Operational phase	Negligible risk

6.10 Waste

6.10.1 Baseline Conditions

Waste is defined in the *Airports (Environment Protection) Regulations 1997* and includes waste oil and oil containers, surplus or spent chemicals, paints and solvents and their containers, sewage, and waste paper, litter and food scraps.

Under the AES (BAC 2014), the action plan for waste management seeks to achieve the sustainable management of waste through initiatives such as waste minimisation and segregation of waste and recycling. The AES gives consideration to the *Waste Reduction and Recycling Act 2011* when managing waste on Airport land.

The BNE Auto Mall has been under development since September 2017. The site has been cleared and is currently undergoing earthworks and surcharging. Waste currently generated at the site includes vegetation, fill material, construction equipment waste, packaging materials, regulated wastes (e.g. hydrocarbon waste) and general wastes.

A waste management plan and waste contract and collection arrangements will be put in place consistent with the proposed tenants needs and employed with commencing operations.

6.10.2 Assessment of Impacts

Construction waste will be generated through site works and the building program. During construction and operation of the BNE Auto Mall site, a number of waste products are likely to be generated, including:

- Packaging materials – any materials used on site that are delivered in packaging material. This includes pallets, crates, cartons, plastics and wrapping materials. All packaging material will need to be disposed of once the product has been used;
- Wastes from construction equipment maintenance – various heavy vehicles and construction equipment will be used during the construction phase. Liquid hazardous wastes from cleaning, repairing and maintenance of equipment may be generated. Leakage or spillage of fuels/oils within the site needs to be managed and wastes disposed of appropriately;
- Regulated wastes – including hydrocarbon waste such as waste oil, oily water, oily sludge, grease, coolant, oily rags, oil filters, drums, detergent, solvents, batteries, tyres, paints and resins; and
- General wastes – this includes retail waste, scrap materials and biodegradable wastes.

Potential impacts associated with the inappropriate management of waste generated from the above may include contamination of soils, surface water and groundwater.

6.10.3 Mitigation Measures

Collection, storage and disposal of waste will be managed under a CEMP to avoid impact or nuisance on and off the identified development site. Appropriate measures are to be employed to satisfy the sustainable management of waste generation and disposal in accordance with the 2014 AES.

Mitigation measures relating to waste management to be included in a site-specific CEMP include:

- Vegetation wastes from site clearing should be mulched and used in on site landscaping and erosion and sediment activities;
- Identify possible secondary uses for construction wastes prior to and during construction;
- Designate location of construction compounds and areas for each waste stream to allow for waste segregation;
- Ensure construction and industrial waste is stored in industrial covered skips/bins;
- Contain and capture runoff from designated waste areas;
- No waste is to be burnt on site;
- Ensure waste bin lids are closed and work sites kept tidy to avoid littering and attraction of birds, vermin and other wildlife;
- Any packaging materials to be collected separately and re-used or recycled including timber, paper, cardboard, pallets and plastics;
- Waste disposal is to occur at approved facilities; and
- Engage the services of a licensed waste contractor and recycler if removing regulated wastes from the Project site.

As such, the impact of the BNE Auto Mall on waste issues is assessed as:

Waste	
Construction phase	Negligible risk
Operational phase	Negligible risk

6.11 Hazardous Materials and Dangerous Goods

6.11.1 Baseline Conditions

The management of hazardous goods must be in accordance with the *Work Health and Safety Act 2011* (WHS Act)*, Work Health and Safety Regulation 2011* (WHS Regulation) and relevant Australian Standards. In addition, storage and use of petroleum products will comply with the Brisbane City Plan SC6.28 *Storage and Dispensing of petroleum products planning policy* and other guidelines and standards/codes as required.

6.11.2 Assessment of Impacts

As discussed in Section 6.1, it is anticipated that operation of the BNE Auto Mall will involve storage and use of fuels, oils, solvents and other potentially hazardous chemicals as a result of testing and maintaining vehicles. The storage and use of these potential contaminants may result in soil and/or groundwater contamination.

Furthermore, operation of the vehicles and potential servicing within the BNE Auto Mall precinct, may also have the potential to cause air quality impacts as well as odour impacts. During operation of the BNE Auto Mall, tenants will be responsible for the appropriate management and disposal of hazardous goods, and compliance with any licences required, under the WHS Act.

6.11.3 Mitigation Measures

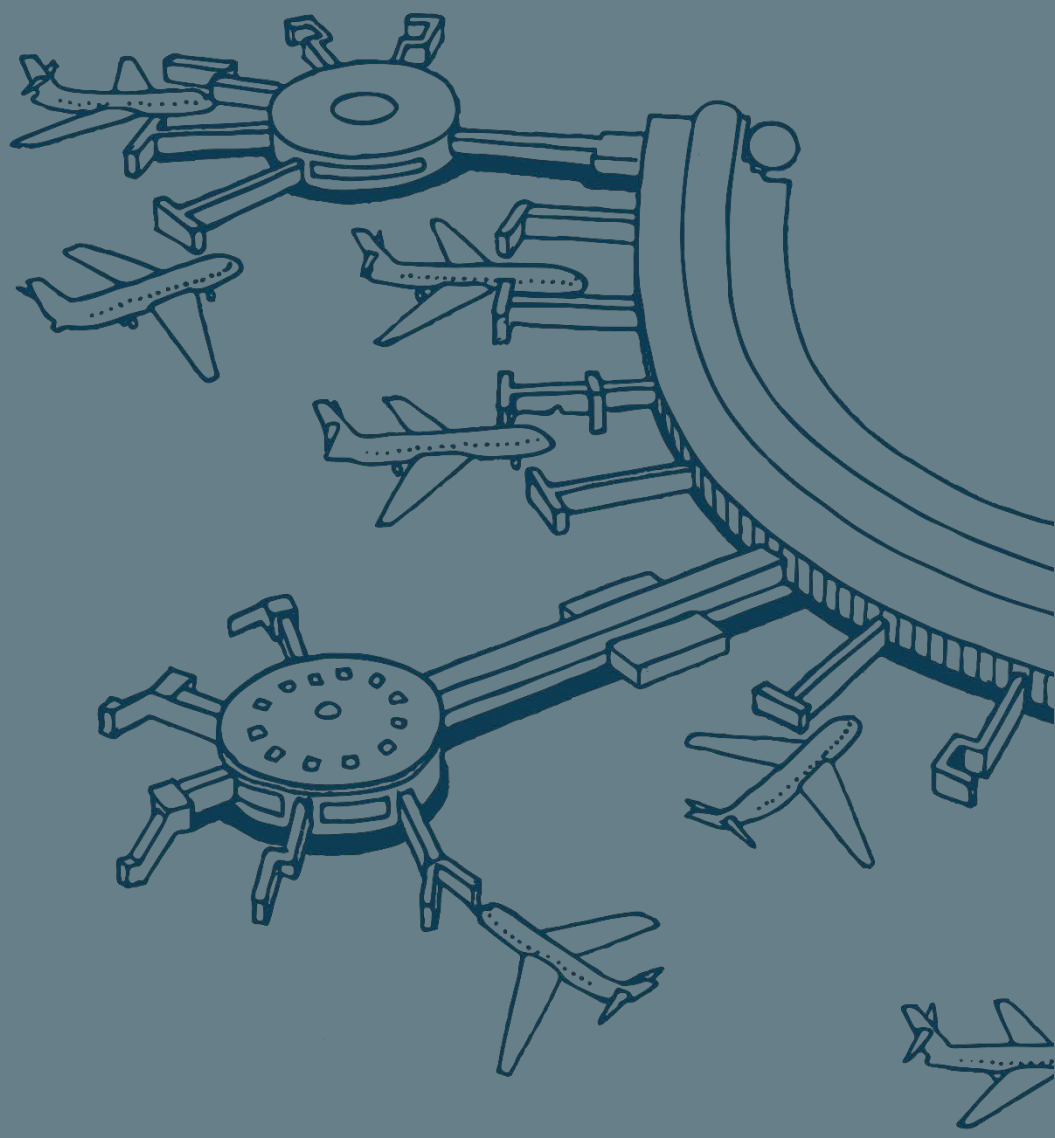
The storage of fuels and hazardous substances will be conducted in accordance with AS1940:2017, *The storage and handling of flammable and combustible liquids*. All hazardous materials will be stored with an up to date material safety data sheet (MSDS). An MSDS register will be maintained adjacent to the hazardous material storage area with the location clearly signed.

Contractors and tenants are responsible for any licences required under the WHS Act. Hazardous material and dangerous goods associated with the BNE Auto Mall site will be handled, stored and disposed of in accordance with the WHS Act, WHS Regulation, relevant Australian Standards and the Brisbane City Plan SC6.28.

A register of hazardous materials stored and used by each tenancy will be kept by BAC, who will undertake an audit and hazard assessment every two years to determine the cumulative impact of hazardous material being distributed across the site.

Following the implementation of the mitigation measures, the impact of the Project on the management of hazardous materials and dangerous goods is assessed as:

Hazardous materials and dangerous goods	
Construction phase	Negligible risk
Operational phase	Negligible risk



7

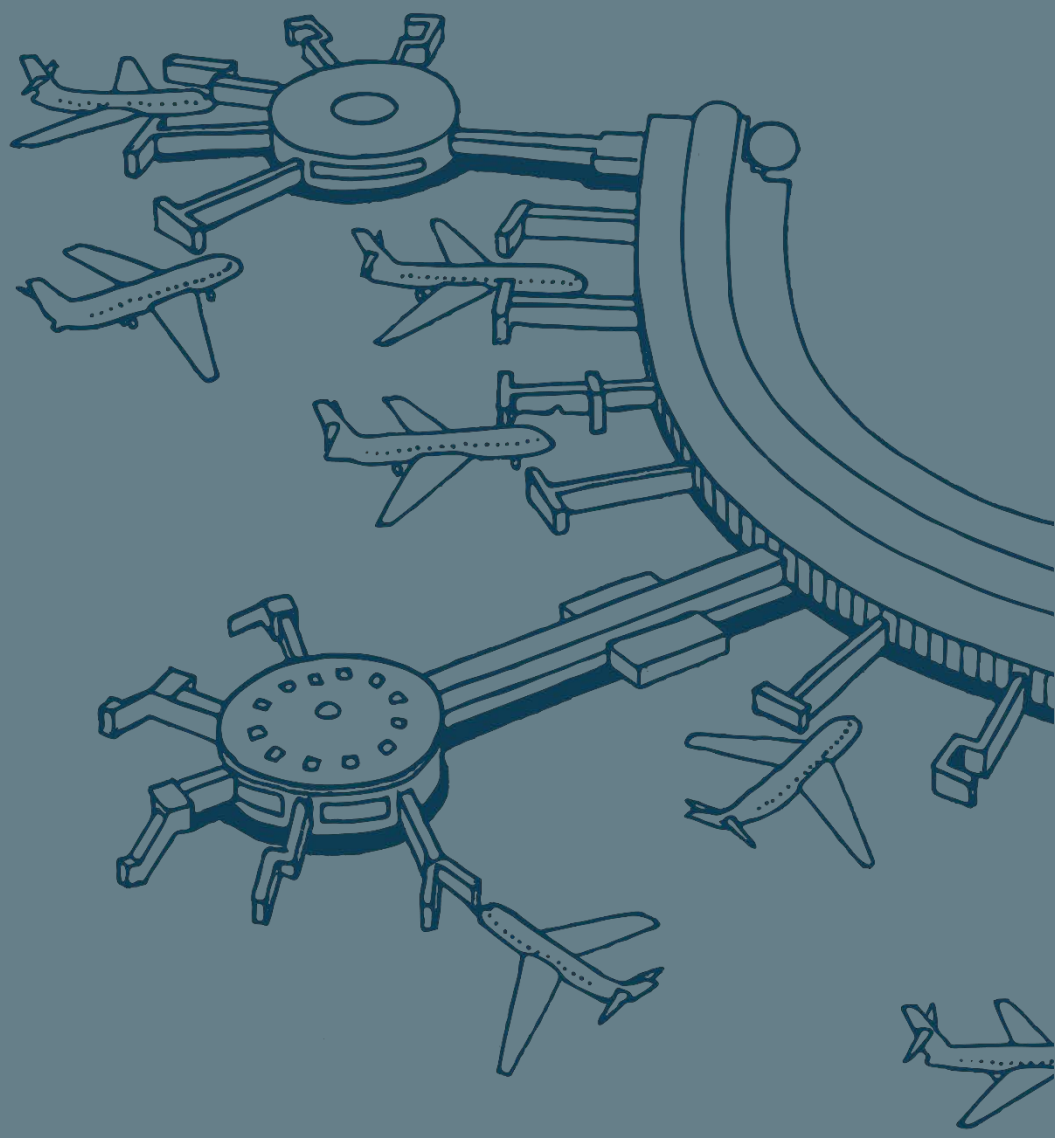
BUILDING SUSTAINABILITY

7. Building sustainability

The key sustainability initiatives that are being investigated as part of the design of the BNE Auto Mall include the following:

- The incorporation of renewable energy, such as Solar PV.
- The installation of movement sensor LED lighting.
- Climate change resilience assessment.
- Allowance for electrical vehicle charging.
- Identification of the potential re-use of rainwater.

The detailed design phase will be used to further refine sustainability initiatives through an Ecologically Sustainable Design assessment.



8

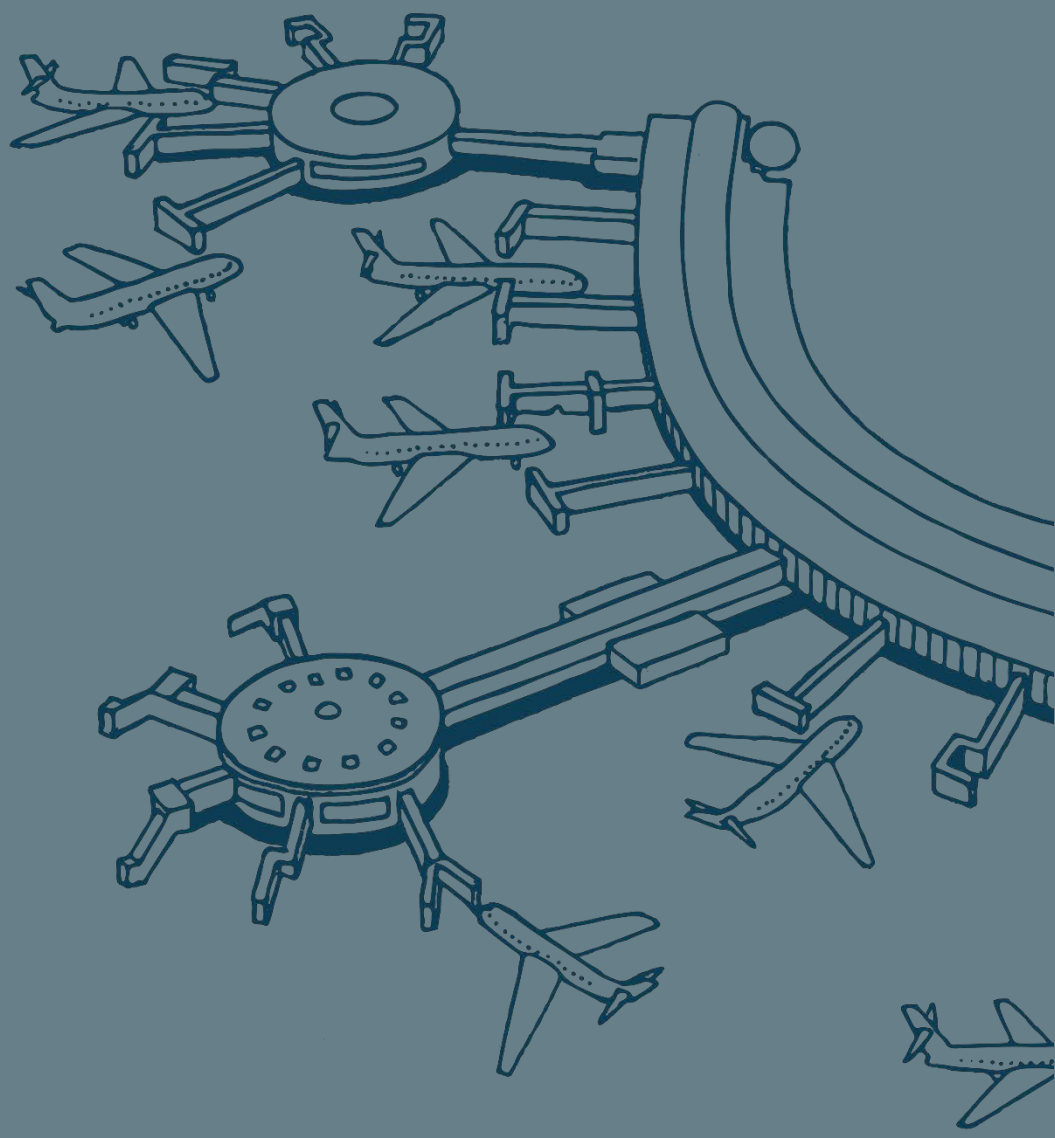
SUMMARY OF IMPACTS

8. Summary of impacts

The assessment component of the MDP has been undertaken to meet the requirements of Section 91 (1) (h) of the *Airports Act 1996* (Cth*).* Table 29 provides a summary of the potential operational, environmental and social impacts considered in the assessment.

Table 29 Sustainable, responsible and impact investing objectives and commitments

Section	Environmental and social factors	Impacts	
5.1	Traffic and Parking	Negligible	Low
5.2	Aviation Operations and Safety	Negligible	Negligible
6.1	Geology, Soils and Topography	Low	Negligible
6.1	Contamination	Negligible	Low
6.2	Ecology	Negligible	Negligible
6.3	Hydrology and Water Quality	Low	Negligible
6.4	Air Quality and Odour	Negligible	Negligible
6.5	Noise and Vibration	Negligible	Low
6.6	Land Use	Negligible	Negligible
6.7	Landscape	Negligible	Negligible
6.8	Social and Economic Issues	Negligible	Negligible
6.9	Cultural Heritage	Negligible	Negligible
6.10	Waste	Negligible	Negligible
6.11	Hazardous Goods	Negligible	Negligible



9

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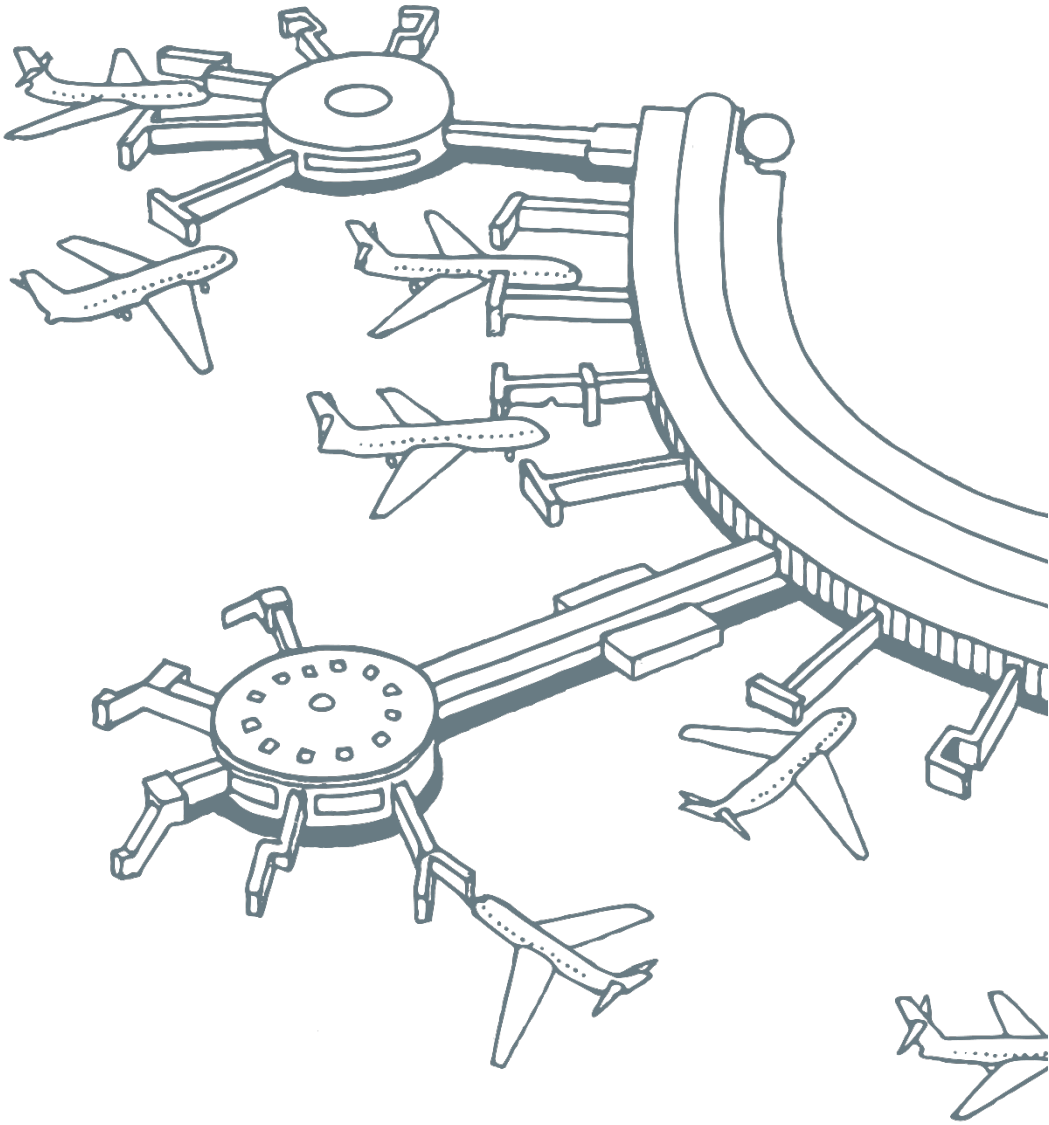
APPENDIX A
MAJOR DEVELOPMENT PLAN CHECKLIST

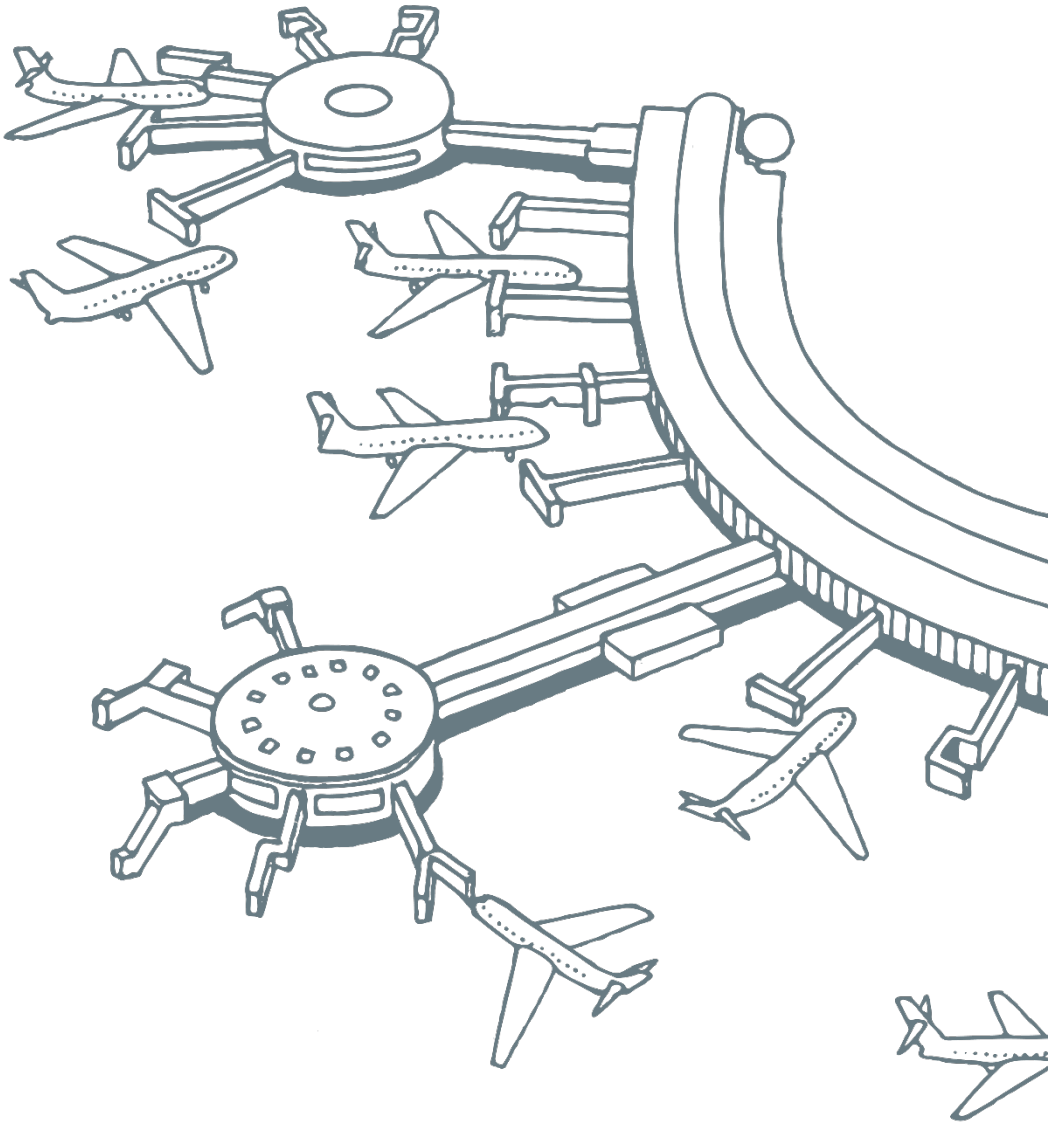


This Appendix indicates the requirements under Section 91 of the *Airports Act 1996* for the contents of an MDP and demonstrates that this MDP is consistent with these requirements.

Contents of a Major Development Plan	Section(s) of MDP
(1A) The purpose of a major development plan in relation to an airport is to establish the details of a major airport development that: a) relates to the airport; and	Section 3.1
b) is consistent with the airport lease for the airport and the final master plan for the airport.	Sections 3.3 and 3.4
(1) A major development plan, or a draft of such a plan, must set out:	
a) The airport lessee company's objectives for the development; and	Section 2
b) The airport-lessee company's assessment of the extent to which the future needs of civil aviation users of the airport, and other users of the airport, will be met by the development; and	Section 3.1.1
c) a detailed outline of the development; and	Section 2.4
ca) whether or not the development is consistent with the airport lease for the airport; and	Section 3.3
d) if a final master plan for the airport is in force—whether or not the development is consistent with the final master plan; and	Section 3.4
e) if the development could affect noise exposure levels at the airport— the effect that the development would be likely to have on those levels; and	Section 6.5.2
g) if the development could affect flight paths at the airport— the effect that the development would be likely to have on those flight paths; and	Section 5.2.1
f) the airport lessee company's plans, developed following consultations with the airlines that use the airport, local government bodies in the vicinity of the airport and—if the airport is a joint user airport—the Department of Defence, for managing aircraft noise intrusion in areas forecast to be subject to exposure above the significant ANEF levels; and	Section 5.2.7
g) an outline of the approvals that the airport-lessee company, or any other person, has sought, is seeking or proposes to seek under Division 5 or Part 12 in respect of elements of the development; and	Section 3.6
the likely effect of the proposed developments that are set out in the major development plan, or the draft of the major development plan, on: (i) traffic flows at the airport and surrounding the airport; and (ii) employment levels at the airport; and (iii) the local and regional economy and community, including an analysis of how the proposed developments fit within the local planning schemes for commercial and retail development in the adjacent area; and	Sections 5.1 and 6.8
(h) the airport-lessee company's assessment of the environmental impacts that might reasonably be expected to be associated with the development; and	Section 6
(j) the airport-lessee company's plans for dealing with the environmental impacts mentioned in paragraph (h) (including plans for ameliorating or preventing environmental impacts); and	Section 6
(k) if the plan relates to a sensitive development--the exceptional circumstances that the airport-lessee company claims will justify the development of the sensitive development at the airport; and	Section 6

Contents of a Major Development Plan	Section(s) of MDP
(3) Consistent with section 5.04 of the Airports Regulation relating to obligations from pre-existing interests.	Section 3.6
(4) the extent (if any) of consistency with planning schemes in force under a law of the State in which the airport is located; and if the major development plan is not consistent with those planning schemes--the justification for the inconsistencies.	Section 3.5
(6) In developing plans referred to in paragraph (l)(f), an airport-lessee company must have regard to Australian Standard AS 2021--2000 ("Acoustics--Aircraft noise intrusion--Building siting and construction") as in force or existing at that time.	Section 5.2

APPENDIX B
EVENT MANAGEMENT PLAN TEMPLATE



EVENT
MANAGEMENT PLAN TEMPLATE

EVENT:	
DATE:	
TIME:	
LOCATION:	
CLIENT:	

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SCHEDULE A: 2

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2. SITE PLANS 4
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4. INSURANCES 5
5. VENUE MANAGEMENT PLAN / PARK MANAGEMENT 5
6. ACTIVITIES OPERATIONS GROUP 7
7. EMERGENCY AND SAFETY MANAGEMENT PLAN 7
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10. FIRST AID AND PUBLIC HEALTH PLAN 12
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2. PARKING PERMITS ..... Error! Bookmark not defined.

SCHEDULE A:

1. EVENT DETAILS

EVENT DETAILS FORM

Event Name:	
Venue Type:	
Capacity:	
Venue Name:	
Park Lawn/ Site Name:	
Venue Address:	
Venue Owner:	
Bump In Date/Time:	
Bump Out Date/Time:	
Event Start/Finish Date/Time:	
Event Organiser's Name:	
Company Name:	
Company Address:	
Work Phone:	
Mobile Phone:	
Email:	
Fax:	
Website:	
ABN:	
Purpose/Aim:	
Main Activities/Components:	
Target Audience:	
BAC Consent:	
Key Stakeholder Approval:	

BUMP IN RUNNING SHEET

Bump In Running Sheet				
Date	**Time (From / To)**	**Action**	**Responsible**	**Contact (& Number)**
		.		

EVENT PROGRAMME RUNNING SHEET

An Event Programming Running Sheet is to be developed.

BUMP OUT RUNNING SHEET

Bump Out Running Sheet				
Date	**Time (From / To)**	**Action**	**Responsible**	**Contact (& Number)**
		.		

ROLES AND RESPONSIBILITIES SHEET

Roles and Responsibilities Running Sheet			
Time	**Action**	**Responsible**	**Contact Number**

2. SITE PLANS

A site plan is to be provided including the proposed layout and event infrastructure.

3. COMMUNICATION STRATEGY

All event communication will be coordinated between (parties to be confirmed)

Key contacts will include event partners such as selected sponsors, as well as local stakeholders including businesses and residents.

COMMUNICATIONS AND PROMOTION PLAN

Adequate and appropriate signage will be arranged for the event in terms of operations. Approval is to be sought from Brisbane Airport Corporation (BAC) for any signage, including advertisements, banners and posters with details including the location, size, content, type of material and method of fixture.

A letter box drop may be undertaken prior to the scheduled date of your event. This will be undertaken by the Event Coordinator.

Letter Box Drop:	Print:
Television:	Public Notices:
Radio:	Stakeholder Notification:
Event Signage:	
Communication at Event:	

List those notified of event date and time:

WHO	WHEN

WET WEATHER CONTINGENCY PLAN

How will it be implemented?

Unless extreme weather is encountered, the Event will proceed as planned. Wet weather protection to be supplied by the Event Coordinator. This may include umbrellas or ponchos.

When will it be implemented?

Gear to be distributed on the day.

Who will implement it?

Event staff.

What will happen?

Damage prevention for grass if there is heavy rain prior to the event:

Details of delays / reduction in program / full cancellation:

Weather Forecast Details: _____

4. INSURANCES

Name of Insurer:	
Policy Number:	
Address:	
Expiry Date:	
P/L Value:	
Contact Details:	

(Event Contractors/ Suppliers to supply Public Liability Insurance – a minimum of $10 million (unless specially approved otherwise) for coverage of the contractor's equipment and facilities).

(Worker's Compensation Insurance to be supplied as above – for any contractors or employee(s) employed by the Applicant in connection with the event).

5. VENUE MANAGEMENT PLAN

The Event will ensure it complies with the following rules and guidelines:

"The venue must be appropriate to the size and nature of the proposed event, taking into account the sensitivity of the existing stakeholders, the land area available for the event, and the proximity to neighbouring residents and businesses that could be affected by the event of venue"

Adequate measures will be taken to ensure that the event site will be protected from damage, including;

– Protection of hard stand areas from tyre marks with the use of track matting or a similar product;

- Protection of sensitive garden beds and plantings, where necessary, through use of barricading to prevent access;
- No signs or other structures are to be attached to trees without the permission of the Brisbane Airport Corporation;
- Only vehicles authorised by the Brisbane Airport Corporation are permitted to enter parks and public spaces where vehicles are not generally permitted;
- Vehicles will not be allowed to drive on grass unless grass protection measures such as port-a-track, plywood boards or similar measures are laid;
- Drip trays will be placed underneath any vehicles that are stationary in parks open space;
- Authorised vehicles must be escorted and not exceed walking pace;
- No vehicles can remain in the park or open space during the event, unless specifically authorised;
- The site must be left in the same condition as it was in prior to the event and the event organiser will be charged for any remedial work or additional cleaning required to achieve this;
- The duration of the event, including bump-in and bump-out, has been scheduled to minimise the amount of time the site is not available for public use;

TREE MANAGEMENT

Vehicles are not permitted to drive or park beneath the dripline of any tree.

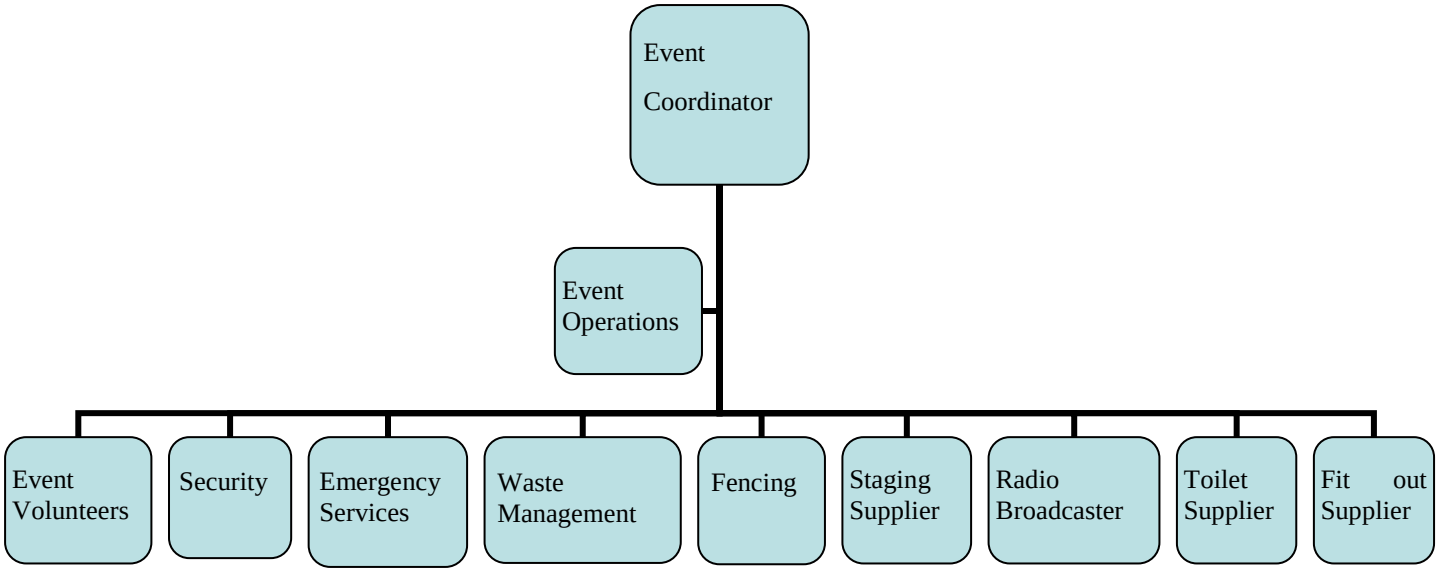
No structures or vending areas will be permitted beneath the dripline of any tree.

Tree protection fencing (e.g. bicycle racks) will be installed, prior to bump-in, around all significant trees in iconic parks.

The Tree Management Team shall be contacted prior to event to specify which individual trees require protection

6. ACTIVITIES OPERATIONS GROUP

Chain of command from Event Coordinator to emergency services, suppliers, volunteers etc.



LOCATION OF EVENT HEADQUARTERS:

While the location has yet to be confirmed, it is envisaged that the event headquarters will be held in a vacant office space within the precinct or by the use of temporary sheds.

7. EMERGENCY AND SAFETY MANAGEMENT PLAN

EMERGENCY CONTACT LIST

Process/procedures/contacts for managing an emergency:

Emergency Services: 000	Ambulance/Police/Fire:
Event Coordinator:	Communications/Media Rep:,
Risk Manager:	St Johns Ambulance:
CoS Representative:	

EMERGENCY EVACUATION PLAN

Evacuation Assembly points:	
Meeting points for emergency services:	

Announcements: "Ladies and Gentlemen, I need your attention. We have a situation that requires your assistance. You are not in any immediate danger, however, for your safety we need to temporarily clear the area. Please assist us by following the directions of our wardens to the nearest safe exit."

SAFETY MANAGEMENT PLAN

A safety site induction will be held prior to any contractor/supplier commencing works on the event site. No contractor will be permitted to commence works until an induction has been completed and details collected, including safe method statements and insurances.

This induction will be conducted by the Event WH&S officer.

EXAMPLES OF HAZARDS WHICH COULD CAUSE AN EMERGENCY

Armed or Dangerous Intruder	Explosion
Bomb Threat	Fire
Chemical, Biological or Radiological	Hazardous substance incident
Civil Disturbance	Industrial accident
Crowds on Active Roads	Medical emergency
Electrical failure	Missing Person
Equipment failure	Overcrowding
Person entrapment	Structural instability

LOST CHILD / GUARDIAN FORM

Lost Child / Guardian Form

Date:	Time:
LOST CHILD – ask the Guardian:	LOST GUARDIAN - ask the Child:
1. What is your name?	1. What is your name?
2. Where did you last see the child?	2. Where did you last see the Guardian?
3. Child's age?	3. Did they tell you what to do if lost?
4. Child's hair colour?	4. Guardian's age?
5. Child's height?	5. Guardian's hair colour?
6. What clothes were they wearing?	6. What clothes were they wearing?
7. Does the child have ID?	7. Guardian's height?
8. Does the child have a mobile?	8. Do they have a mobile?
Other Information:	Other information:
Reported by:	Signature:

INCIDENT LOG FORM - TEMPLATE

Incident Log Form – Template				
Date	ID	Description or Nil	Action Required	Time

Number of incidents reported: _____

Event Representative: _____

Area / Venue: _____

Signature: _____

Date: _____Time: _____

INCIDENT REPORTING PROCEDURE

- An incident does not have to hurt someone but may potential to hurt someone
- All incidents to be recorded on the form
- The log is to be returned to the Event Coordinator / Manager

- Every incident which involves injury or property damage:
- Must be reported to the Event Coordinator / Manager
- Must have statements completed ASAP by all staff present
- Witnesses names and contact details must be recorded
- Try to obtain information as unobtrusively as possible

Additional Notes: _____

_____

_____

_____

8. SECURITY MANAGEMENT

A security contractor will be engaged to manage the sensitive location on site as well as provide assistance to mitigate any unwanted behaviour.

Security Contractor:	
Contact:	
Phone Numbers:	
Number of Security Guards:	
Duties:	

STAFF ROSTER:

ADDITIONAL SECURITY:

While it is not essential to have a police presence at the event, the assistance of some QPS staff would certainly be beneficial.

Further discussions with local authorities including QPS and QAS will determine the need for any law enforcement requirements.

Local Area Command Contact Details

Area:	Address:	Contact Number:
Police:		

9. PEDESTRIAN MANAGEMENT PLAN

Public access directional signage will be installed to assist with public movement throughout the event precinct where normal public pedestrian conditions have changed.

10. FIRST AID AND PUBLIC HEALTH PLAN

St John Ambulance will provide first aid services on the day of the event should they be required.

11. ALCOHOL MANAGEMENT / LIQUOR LICENSING

Should alcohol be served, the appropriate licensing and approvals are to be acquired prior to the event.

12. WASTE MANAGEMENT PLAN

A cleaning contractor will be engaged to undertake the event precinct waste management. Minimal additional waste management infrastructure is required within the event precinct as existing public bins will suffice.

Expected waste will include general paper and plastic rubbish including plastic water and drink bottles.

A pre-event and post-event dilapidation report will be produced to ensure all event damage caused, if any, is accounted for and reported.

These reports will be presented to the Site Owner for review and approval. Any damage caused deemed to be the fault of the event will be negotiated and agreed between the Event Organiser and the Site Owner.

13. NOISE

During the public and stakeholder notification process, a comprehensive event outline will be presented to ensure all local businesses and residents are aware of the proposed event and expected noise levels produced at the event.

Event noise is to be undertaken in accordance with the Operational Noise Management Plan and Track Operational Management Plan – strategies to address noise are identified in these documents and will be incorporated as part of event operations.

14. TEMPORARY FOODSTALL APPLICATIONS

Should temporary food stalls be required, the appropriate licensing and approvals are to be acquired prior to the event.

15. HEALTH SERVICES / TOILETS / AMENITITES

Adequate sanitary facilities will be provided on the site to cater for the maximum number of event entrants. These facilities will be appropriately managed throughout the event by the official event cleaning contractor.

There will be NO SMOKING in any of the approved structures / office spaces, and appropriate signage will be displayed in conspicuous locations throughout the structures / office spaces.

HEALTH SERVICES / TOILETS / AMENITIES PLAN

HEALTH SERVICES/TOILETS/AMENITIES PLAN	
Amenities Contractor:	
Position:	
Phone Numbers:	
Toilets Delivery Time / Date:	
Toilets Pick Up Time / Date:	
Toilets (number and location):	
Accessible Toilets:	
Toilet Servicing:	

16. TEMPORARY STRUCTURES

Certification shall be provided by the installers for the structures, confirming installation in accordance with the relevant specifications and correct loadings. The certificates are to be provided to the Event Construction Manager to be then forwarded to the relevant authorities

All structures, to which members of the public may possibly gain access, are to be supervised by responsible persons at all times to restrict public access.

Exits must be so provided and arranged as to afford a ready means of egress from all parts of temporary structures and must provide a minimum unobstructed height of 2000mm.

Any proposed security fencing must be designed and installed to accommodate expected crowd loads.

Adequate hand held fire extinguishers will be supplied and must be available at all times during operation, of any electrical or electronic device and are to be available at all times during operation, and a schedule of supply must be provided to the inspecting officer prior to commencement of the approved use.

Erection and dismantling (packing up) will be undertaken quietly and orderly to minimise disturbance to the surrounding locality.

Details of all structures to be installed:

Structure Type	Dimensions

17. RISK MANAGAMENT PLAN

Risk is the combination of the likelihood of specific unwanted events occurring and the potential consequences if they should occur.

Risk analysis/assessment involves consideration of the sources of risk, their positive and negative consequences and the likelihood that those consequences may occur.

- What is the likelihood of a risk occurring?
- What are the consequences of that risk occurring?
- What controls are in place to prevent or detect potential risks?

For each risk identified determine its consequence and probability. Combining these two factors will provide an overall estimated level of risk.

Probability of Risk Occurring		
A	Almost certain	The event will occur in most circumstances
B	Likely	The event will probably occur at least once
C	Possible	The event may occur at some time
D	Unlikely	The event is not expected to occur
E	Rare	The event may occur only in exceptional circumstances

Consequences of Risk			
1	Insignificant	No Lost time	Under $5k damage or delay
2	Minor	Minor lost time injury or illness	$5k - $50k damage or delay
3	Moderate	Moderate Lost time injury or illness	$50k to $100k damage or delay
4	Major	Serious lost time injury or illness	$100k to $500k damage or delay
5	Catastrophic	Fatality or permanent injury	Over $500k damage or delay

Assess the priority of each hazard / risk by combining the likelihood and consequence info into the following chart:

	Consequence				
Probability	**1 Insignificant**	**2 Minor**	**3 Moderate**	**4 Major**	**5 Catastrophic**
A Almost Certain					
B Likely					
C Possible					
D Unlikely					
E Rare					

1 LOW	2 MEDIUM	3 HIGH	4 VERY HIGH

Pre Event Day Risk Identification, mitigation and incident response					
Risks identification and analysis					**Risk mitigation**
Description incident/risk	**Location**	**Probability**	**Consequence**	**Priority**	**Risk Reduction Strategy**

On Event Day Prior to Opening the Event Final Risk Management Checklist Template				
Description	Ok	Not Ok	N/A	Details
Barriers in place				
Catering checklists				
Disabled access				
Disabled facilities				
Drinking water				
Emergency access				
Emergency exits unlocked/clear				
Emergency services briefed				
Exit signage				
Extension leads and plugs				
Fire Brigade briefed				
Fire extinguishers in position				
Fire hydrants and hoses clear				
Flammable storage				
For elevated platforms compliant				
Balustrades and steps				
Hot surfaces out of public reach				
Housekeeping				
Licensed areas fenced				
Participants/marshals briefed				
Pedestrian access				
Performers briefed				
Police briefed				
Radio function				
Roads and walkway condition				
Safety fences in place				
Safety Officer briefed				
Sharp and protruding objects				
Steps and handrails condition				
Sufficient number of toilets				
Patrons, staff and contractors				
Switchboxes				
Toilets functioning				
Trees and branches				
Tripping hazards/pegs, ropes, etc				
Vehicles removed from site				
Warning signage				
Weather and wind conditions				

Safety concerns transferred to sign off sheet and handed to site safety officer

NOTE: This list must also address controls recommended in the hazard and risk assessment

Inspected by: _____

Date: _____

On Event Day Prior to Opening the Event Final Risk Management Checklist Template			
Site:	Date:	Inspected By:	
Details of Concern	Control	By Whom	Sign Off

ENSURE ALL OUTSTANDING SAFETY ITEMS ARE RECTIFIED AND SIGNED OFF PRIOR TO COMMENCEMENT OF EVENT.

THIS FORM MUST BE RETURNED TO THE EVENT ORGANISER AFTER THE WORKS HAVE BEEN COMPLETED.

Site Safety Manager: _____Signed: _____

Event Organiser: _____Signed: _____

18. EVENT DEBRIEF MEETING AND REPORT

PHOTOS & NOTES TAKEN OF BOTH THE PROGRAMMING AND LOGISTICAL ELEMENTS OF THE EVENT FOR FUTURE REFERENCE

Date / Time of Debrief: _____

What was successful? _____

What was not successful? _____

Recommendations for the event: _____

Other Comments: _____

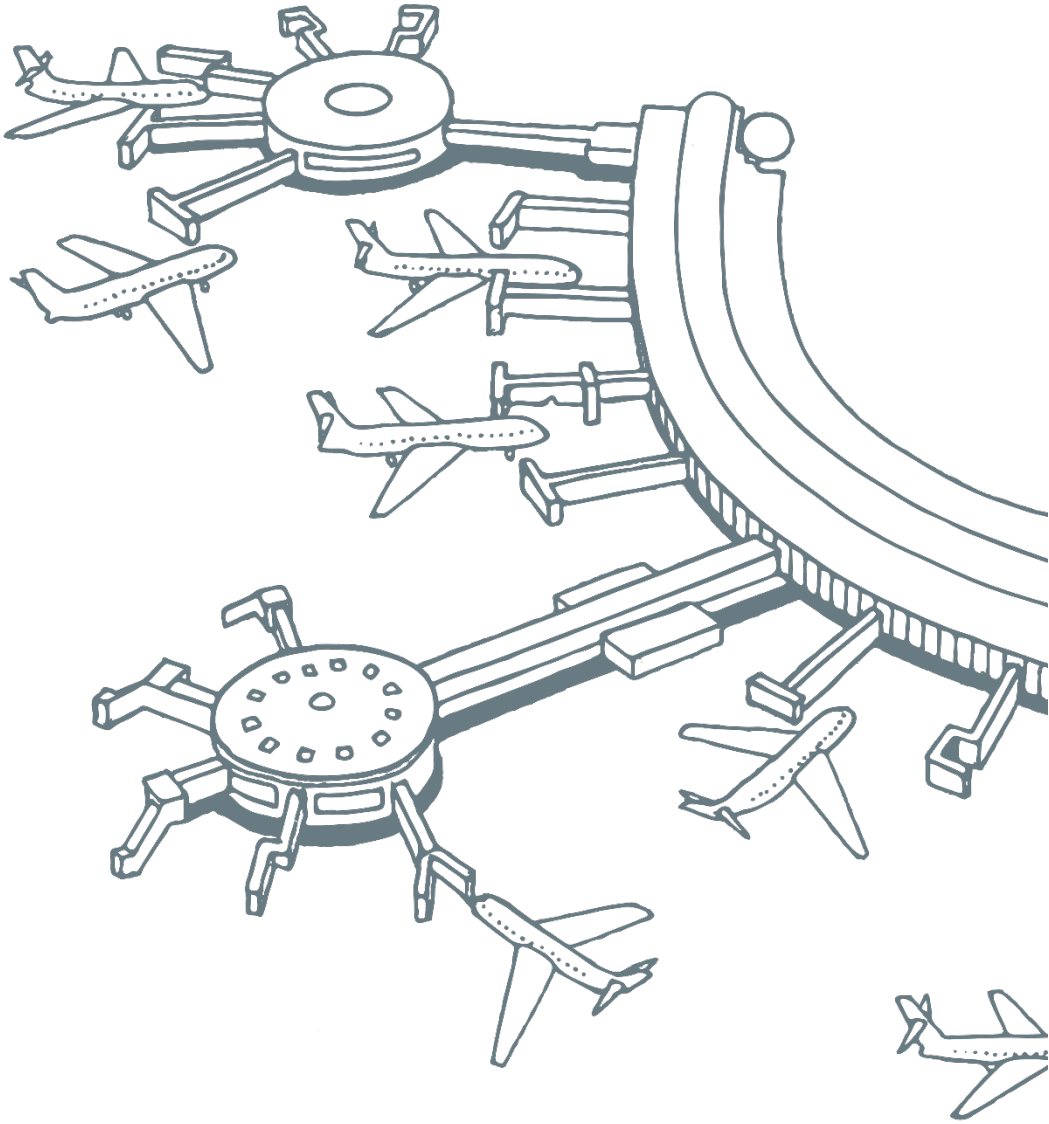
SHEDULE 2:

1. TRAFFIC MANAGEMENT

TRAFFIC MANAGEMENT PLAN

A Traffic Management Plan is to be developed by a suitably qualified person and provided to BAC prior to the Event.

APPENDIX C
BNE AUTO MALL DEVELOPMENT PLAN



BRISBANE AIRPORT AUSTRALIA

BNE Auto Mall Development Plan

A practical guide for the development of automotive dealerships & associated infrastructure.

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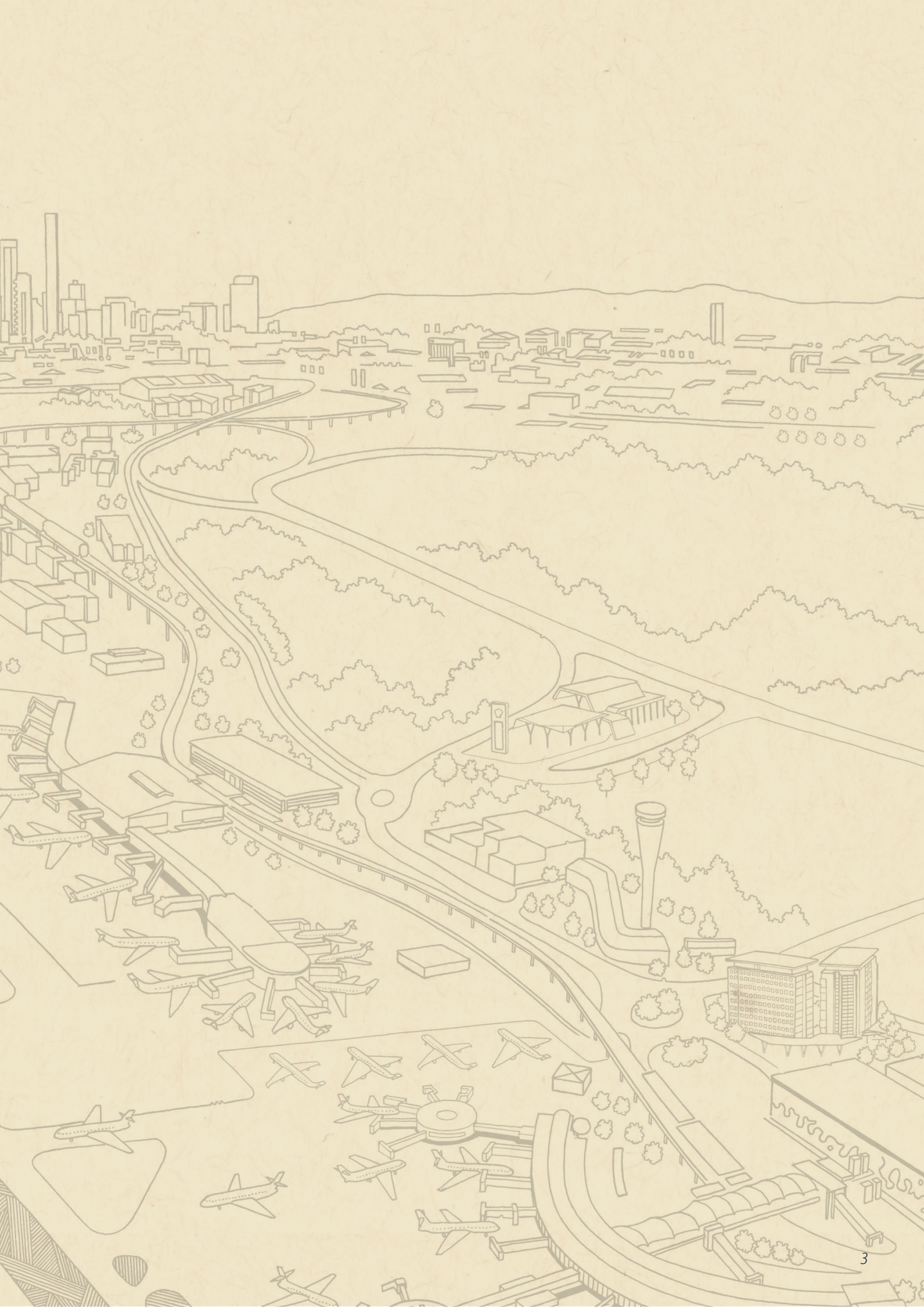


INTENT

THE OPPORTUNITY

BAC's vision for Brisbane Airport is to be world class – a distinctive place that visitors keep coming back to, and the best possible partner for airlines and businesses.

Brisbane Airport is Queensland's most important transport hub, Australia's third busiest airport and one of the nation's fastest growing.

At Brisbane Airport Corporation, we are proud of what we've achieved over the past two decades. We believe our role extends beyond simply providing effective and efficient aviation facilities. It's also about building, and being, a place that reflects the best attributes of our city, state and country.

Brisbane Airport has a responsibility to maximise the potential of its built assets and natural advantages – the extensive landholding in single ownership, the confluence of transport modes, the location eight kilometres from the CBD, the existing utilities and infrastructure – for development.

The BNE Auto Mall Development Plan has been produced to support and advance the delivery of the Airport's Vision, specifically the following key objectives defined in the Brisbane Airport Master Plan:

- To reflect "iconic Queensland themes" including enhanced scenic amenity using a variety of colours, textures and materials.
- To achieve a balance between on-airport built environment and biodiversity values.
- To be recognised as a leader in the management of energy, water, waste, noise and biodiversity, including Water Sensitive Urban Design.
- To achieve environmentally sustainable development across the airport.
- Deliver planned and integrated transport networks.
- Deliver integrated artwork.

WORKING WITH THIS DOCUMENT

THE BNE AUTO MALL DEVELOPMENT PLAN

The BNE Auto Mall Development Plan provides a simple and synthesised precinct specific resource **for the development of automotive dealerships, Brand Experience Centres and the proposed Track Operator Centre.** It has been produced to support and advance the directions set by the established legislative, regulatory and guidance documentation.

It sets in place clear overarching development objectives, defining the guiding ambition for the development within the BNE Auto Mall Precinct.

It is intended for use by all with an interest and intent to develop their dealership business at the BNE Auto Mall - developers and their design teams. It provides development parameters, and defines precinct-wide design requirements to ensure all development contributes to the delivery of the desired amenity of this significant and unique destination.

The document seeks to harness the opportunity to work at a bold scale, advancing the airport's reputation for excellence in planning and the built environment. It also seeks to advance the airport's ambition to be proudly local but world-class, a distinctive place that visitors keep coming back to, and the best possible partner for airlines and businesses.

KEY ELEMENTS

The BNE Auto Mall Development Plan consists of three key elements:

PART 1: PRECINCT AMBITION, VISION & VALUES

Providing the overarching ambition for the Auto Mall project. It sets in place a guiding vision for the long-term character, role and contribution of the built environment of this key airport destination. The 'Statement of Intent' is intended to be used as a quick reference resource to communicate effectively and concisely the core values and development ambition.

PART 2: USER MANUAL - A PRACTICAL GUIDE FOR DEVELOPMENT

Sets out design and development parameters for the development of automotive dealerships, Brand Experience Centres and the proposed Track Operator Centre within the precinct and is structured in two sub sections (see diagram below).

BNE AUTO MALL DEVELOPMENT PLAN

→

PART 01 → PROJECT AMBITION

PART 02 USER MANUAL

PART 3 → GETTING STARTED

PART 2: USER MANUAL - A PRACTICAL GUIDE FOR DEVELOPMENT

A

Creating great development foundations

Considers the overarching site planning requirements for development lots.

A1 General site planning
A2 Spatial planning for vehicles
A3 Landscape infrastructure & water management

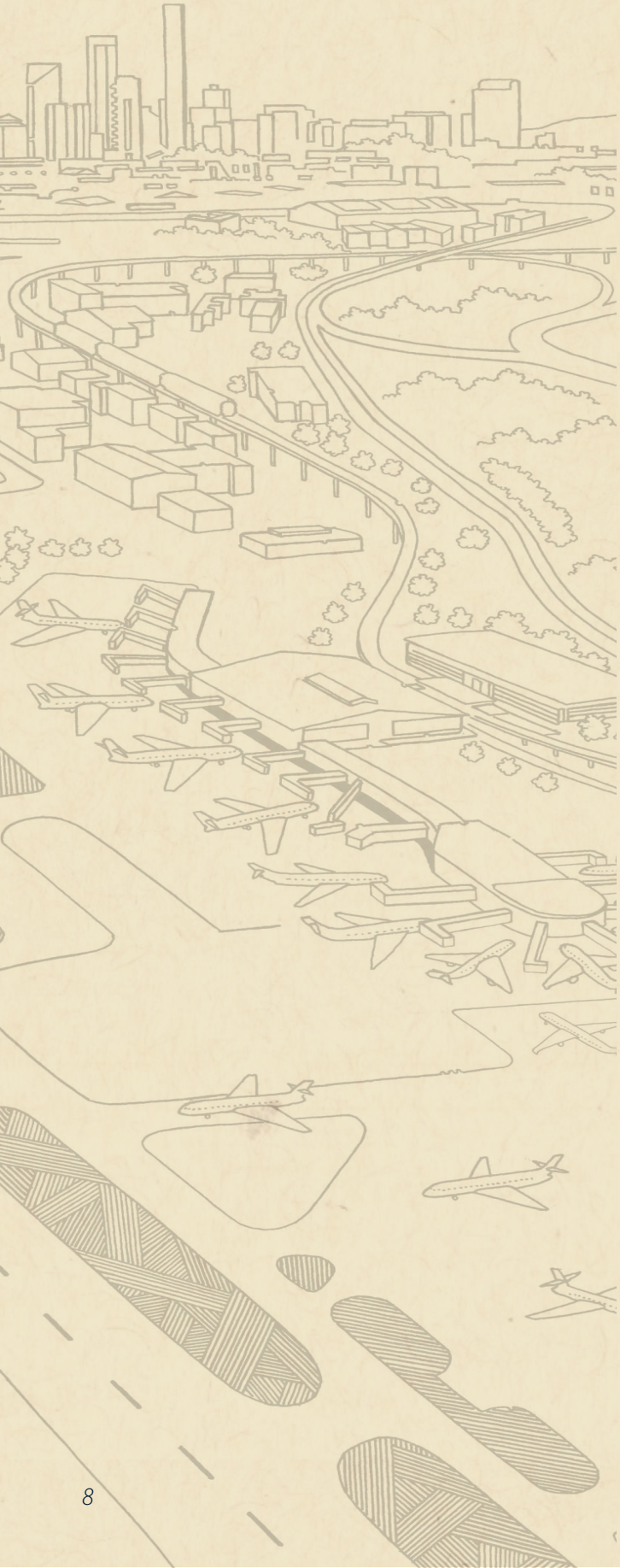
B

Creating a great place to do business

Provides guidance for architecture and associated urban infrastructure, including signage, wayfinding, access and movement.

B1 Building Design
B2 Lighting
B3 Fencing
B4 Services & infrastructure
B5 Signage & wayfinding
B6 Access & movement

PART 01: PRECINCT AMBITION, VISION & VALUES



A PREMIER COMMERCIAL ADDRESS

Brisbane Airport serves as the premier gateway to Queensland. BAC's extensive landholding offers a unique planning and development opportunity close to the Brisbane CBD.

The Brisbane Airport 2014 Master Plan mapped and categorised BAC's developable landholding into five simple and distinct precincts:

1. Airport Central.

2. Airport North.

3. Airport East.

4. Airport South.

5. Airport West.

The naming and definition of these precincts has been determined to establish identifiable geographic areas, in which synergies of character and strong 'brand', land use and development typology, as well as sustainable infrastructure strategies can be understood and delivered.

The BNE Auto Mall is located at the heart of Airport activity, in the Airport Central Precinct.

BNE AUTO MALL AMBITION & ASSETS

The BNE Auto Mall has been conceived to provide a world-class destination for automotive manufacturers and dealers, buyers of new cars as well as the public and motoring enthusiasts interested in a diverse range of exciting automotive experiences.

A key attraction and distinctive feature of the BNE Auto Mall will be a 2.5 kilometre Performance Track at the heart of the area. The track will be supported by high quality facilities for manufacturers and will provide an unrivalled platform to support the promotion and delivery of memorable motoring experiences for both established and new enthusiasts.

The project site is a 51.3ha parcel of undeveloped low lying land enclosed by Moreton Drive, Airport Drive and Nancy Bird Way, close to the Brisbane International Terminal (Airport Central Precinct).

This expansive land parcel, the business proposition and the flexibility offered by the planning environment present a unique opportunity to create a distinctive and memorable address.

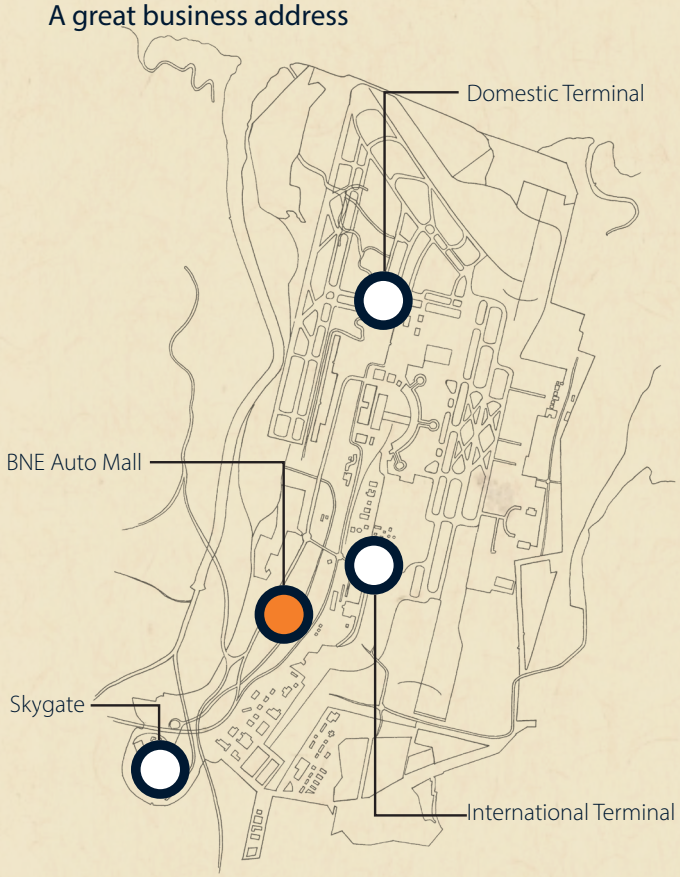
Access & movement

- Future development will be accessed off an internal road network that feeds off Nancy Bird Way (Stage 01) and Airport Drive (Stage 02 and 03).
- A future Transit System is planned, to traverse the precinct.
- Pedestrian movement will be supported by a network of walking paths, likely to be aligned to the internal road network.

Desired amenity

- The proposed development environment will be characterised by a distinctive Queensland feel, high quality and distinctive architecture, and a people-orientated and subtropical public realm.
- The precinct will have a strong urban structure, established through the built form.
- Due to the scale of the areas, architecture and landscape treatments are expected to be bold to complement the scale of the Auto Mall precinct.
- Development will be encouraged to embrace innovation and adopt ecologically sustainable development initiatives.
- Building designs and landscape treatments will deliver a high level of visual amenity for both tenants and visitors.
- Opportunities will be explored to enable the positive integration with the Kingsford Smith Memorial.
- The siting and design of development will harness opportunities for views and vistas of the Performance Track.

A great business address



DEVELOPMENT VISION

BNE Auto Mall is intended to be more than a conventional business address for the automotive industry.

The vision for the precinct has been developed to take advantage of its location within the Brisbane Airport setting, to create a unique destination that offers tenants and visitors significant choice as well as access to an exciting and distinctive destination.

The 'Statement of Intent' for the BNE Auto Mall summarises the overarching ambition for the precinct.

It sets in place a guiding statement of intent for development, to ensure that each development initiative contributes to the long-term character, role, landscape and broader experience of this key airport destination.

The statement is intended to communicate effectively and concisely the core ambition for the successful development of the area.

BNE Auto Mall will be Australia's **premier multi-purpose automotive destination**.

It will provide **a vibrant and visually distinctive business address**, offering tenants, customers and visitors **easy access** to a wide range of retail choices and activities in **a unique setting.**

BNE Auto Mall will be **an exciting landmark destination** that **celebrates the experience and innovation of transport** and the automotive industry.

Illustrative plan

Whilst the focus of this development plan is automotive dealerships, the Brand Experience Centres and the proposed Track Operator Centre the adjacent plan provides an illustrative representation of the ultimate development within Auto Mall and identifies six distinct neighbourhoods, clustered along key streets.

It shows the Test Track and Driver Experience Centre at the heart of the precinct, establishing a hub of activity around which prime locations for automotive dealerships are organised.

The neighbourhood characters are developed from the unique opportunities each location offers within the overall master plan, relative to commercial exposure, visibility, access and opportunities to engage with the public.

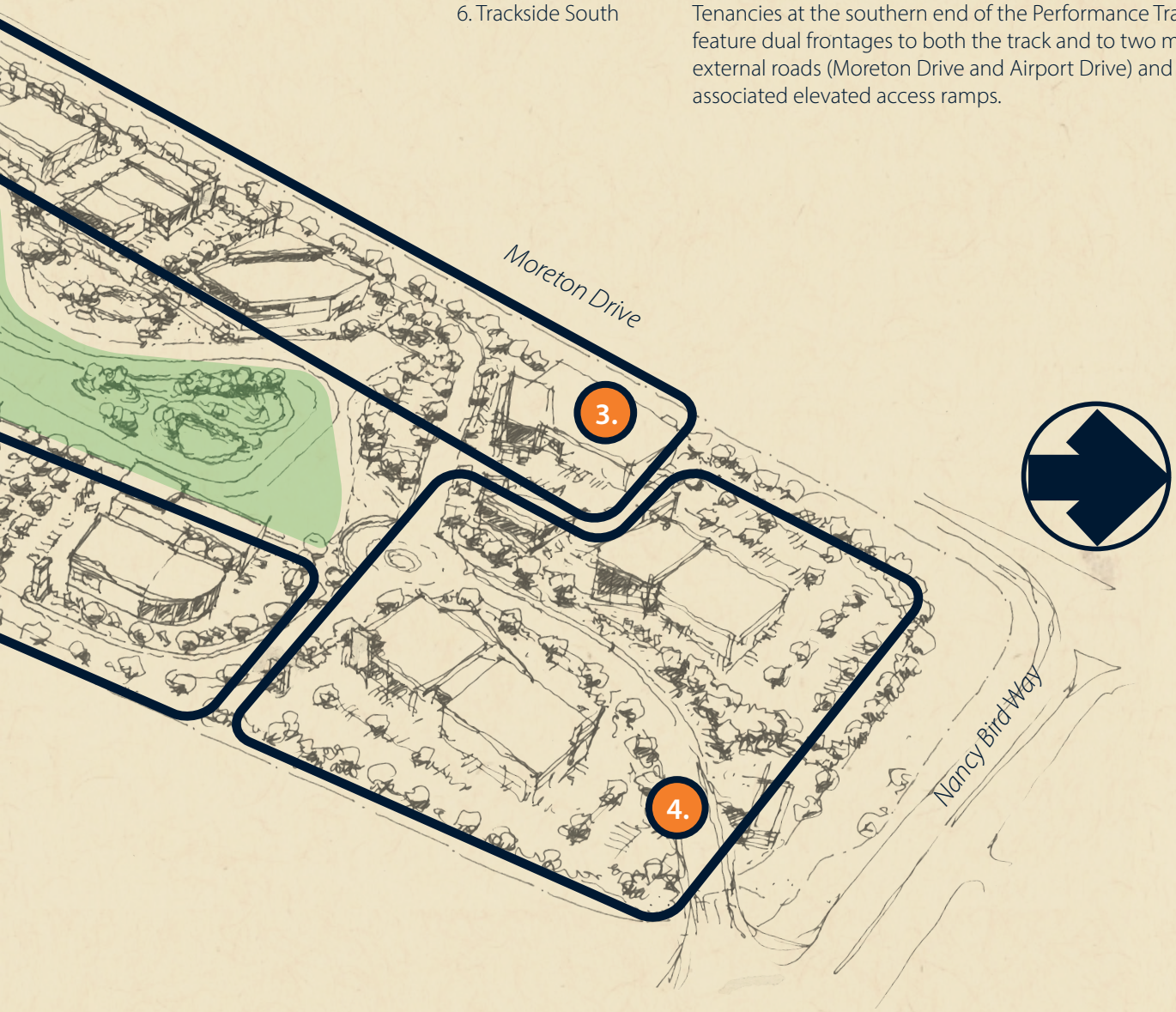
All tenant sites in the Auto Mall master plan feature multiple frontages. All development is required to deliver well-designed solutions for building elevations and landscape treatments to key addresses.

Key addresses include:

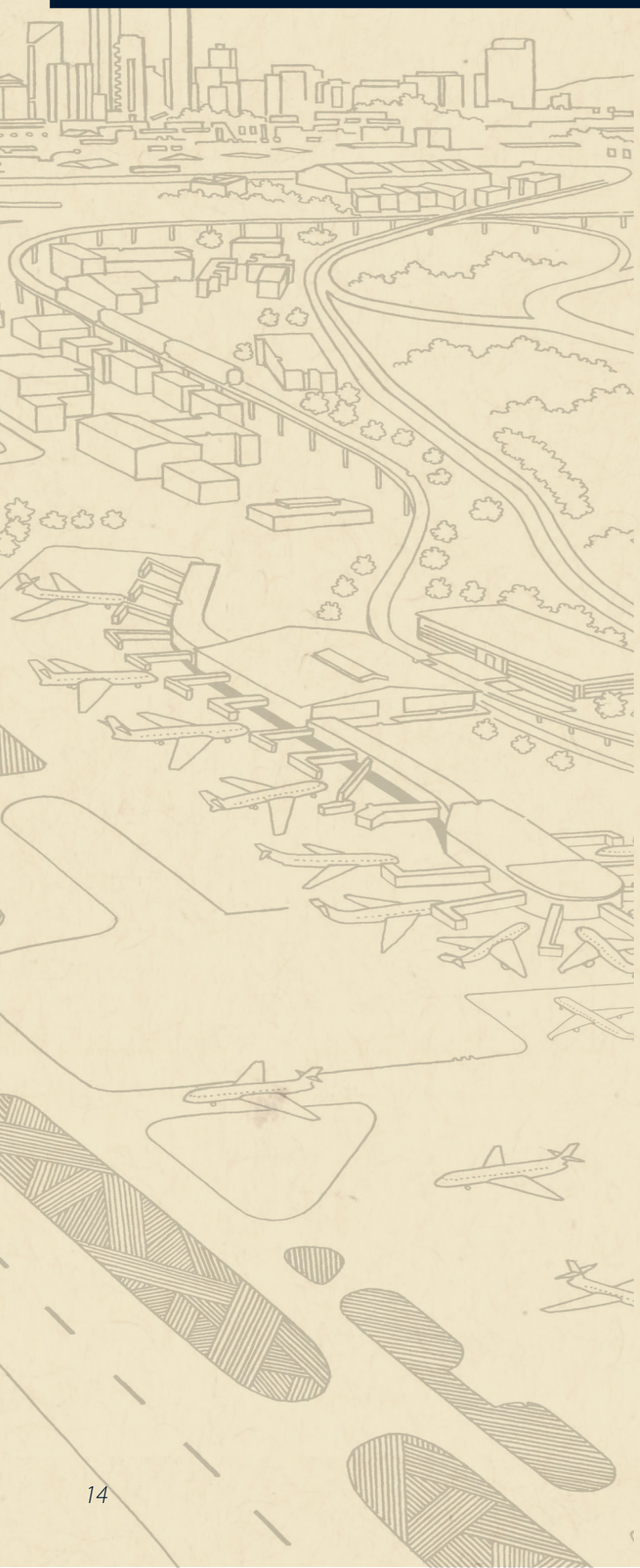
- The Internal Avenue.
- The Performance Track.
- Moreton Drive.
- Nancy Bird Way.
- Airport Drive.

DEVELOPMENT ADDRESS REQUIREMENTS

Address	Key design opportunities
1. Auto Central	Auto Central is the public and active heart of Auto Mall, occupying a central location in the precinct. Driver Experience Centres, Track Control Centre, and associated public facilities are likely to be key features of this address. Development overlooks the Pit Lane on the west side of the track, creating visual interest for a more community-oriented, events and entertainment precinct on the east side.
2. Moreton Central	Tenancies here have their principal frontage to the east, addressing the internal avenue, with opportunities for a strong secondary address and exposure to Moreton Drive.
3. Trackside West	Principal addresses are oriented to the west, presenting a strong urban frontage onto both the internal avenue and Moreton Drive. These tenancies feature opportunities to address the southern end of the Performance Track and the provided four-wheel drive facility.
4. Nancy Bird Gateway	Tenancies at the northern end of Auto Mall enjoy commercial exposure onto the principal northern entrance into the Auto Mall Precinct, as well as opportunities for long views down the length of the Performance Track.
5. Trackside East	Tenancies address the internal avenue, leading to Auto Central, with direct west-facing frontage onto the test track.
6. Trackside South	Tenancies at the southern end of the Performance Track feature dual frontages to both the track and to two major external roads (Moreton Drive and Airport Drive) and their associated elevated access ramps.



PART 02: USER MANUAL - A PRACTICAL GUIDE FOR DEVELOPMENT



INTRODUCTION

The BNE Auto Mall Development Plan has been produced to guide the development outcomes of automotive dealerships, Brand Experience Centres and the proposed Track Operator Centre to ensure individual projects contribute to the delivery of an overall coherent vision.

The plan provides design parameters for lot development, to coordinate character and quality, to ensure all developments strengthen the identity of the Auto Mall and contribute to establishing it as the premier commercial destination for automotive manufacturers and automotive dealerships in Queensland.

The development plan provides a reference to guide day to day decision making, project development and evaluation to ensure all opportunities and investment are aligned to realise BAC's vision for the area.

STRUCTURE

The planning guidelines are presented in two sections:

A

Creating great development foundations

Considers the overarching site planning requirements for development lots.

A1 General site planning
A2 Spatial planning for vehicles
A3 Landscape infrastructure & water management

B

Creating a great place to do business

Provides guidance for architecture and associated urban infrastructure, including signage, wayfinding, access and movement.

B1 Building design
B2 Lighting
B3 Fencing
B4 Services & infrastructure
B5 Signage & wayfinding
B6 Access & movement

A | CREATING GREAT DEVELOPMENT FOUNDATIONS

A1 Site planning

A1.1 Respecting the amenity and investment of neighbours

A1.2 Lot types

A1.3 Super lots/Amalgamated lots

A1.4 Front setback

A1.5 Rear setback

A1.6 General building position

A1.7 Building orientation

A1.8 Boundary treatments

A2 Spatial planning for vehicles

A2.1 External displays

A2.2 Car parking

A2.3 Car storage

A2.4 New vehicle deliveries

A3 Landscape infrastructure & stormwater management

A3.1 General stormwater management

A3.2 Landscape outcomes

A3.3 Stormwater quality

A3.4 Potable water reduction

A3.5 General landscape design

A3.6 Management of fauna

A3.7 General materials choice

OVERARCHING SITE PLANNING OBJECTIVES

Use development to define the street

A key site planning objective for the BNE Auto Mall is to deliver buildings that define and address the street with quality frontages, using building facades to enhance the Auto Mall experience by creating an exciting and unique business and retail address.

This approach is a key strategy to delivering a point of difference at the BNE Auto Mall, setting it apart from the more typical car automotive dealerships. The proposed approach elevates the dealership brand to create a distinctive 'shop frontage' more typical of a quality high street, to carefully manage and balance the visual dominance of large numbers of vehicles which can often present as a large car park rather than bespoke retail destination and automotive experience.

The proposed orientation and positioning of buildings is aimed at creating an active and dynamic streetscape, using building scale and proximity to the street edge to define distinctive street addresses for businesses.

Use development siting to harness visual relationships

Positioning buildings perpendicular to the street helps preserve view corridors throughout the precinct, ensuring visual connections to the test track are maintained and enabling businesses to draw on the expansive landscape setting of the airport to enhance their address. This approach also secures generous open space around buildings for vehicle display and servicing requirements.

The addition of the Performance Track is a significant point of difference for the BNE Auto Mall. The design approach to the precinct establishes the track at the heart of the precinct, as a focal point of the development. The design guidance enables buildings to acknowledge this feature and establish visual connectivity to the track, with opportunities for 'pit lane' type viewing areas, for trackside automotive dealerships to further enhance the customer experience.

Overall, the BNE Auto Mall aims to create a consistent but dynamic built environment, providing its users with an exciting and unique experience.

Pay attention to infrastructure details

Development is to respond to the surrounding infrastructure to mitigate visual impact and deliver and maintain a high standard of visual amenity for the whole site.

Deliver integrated landscape infrastructure & storm water management solutions

The principles of Water Sensitive Urban Design are to be used to integrate stormwater and landscape on the site, providing multiple benefits from infrastructure investments and supporting a resilient and welcoming environment for workers and visitors.

The required capture and use of rainwater will reduce demand on potable water and the volume of stormwater and pollutants entering the receiving environment.

Keeping stormwater at surface and in the landscape on the flat site will reduce the requirement for piped networks, provide treatment of stormwater flows and support the establishment of passively irrigated and cooling green spaces.

ESTABLISHING A DISTINCTIVE BUSINESS ADDRESS - INFLUENCES & KEY CONSIDERATIONS

Use development to define streets, and create a high quality and distinctive destination.

All lots have the potential for significant visibility on multiple sides. This characteristic presents both opportunities and potential risks for the precinct as it grows.

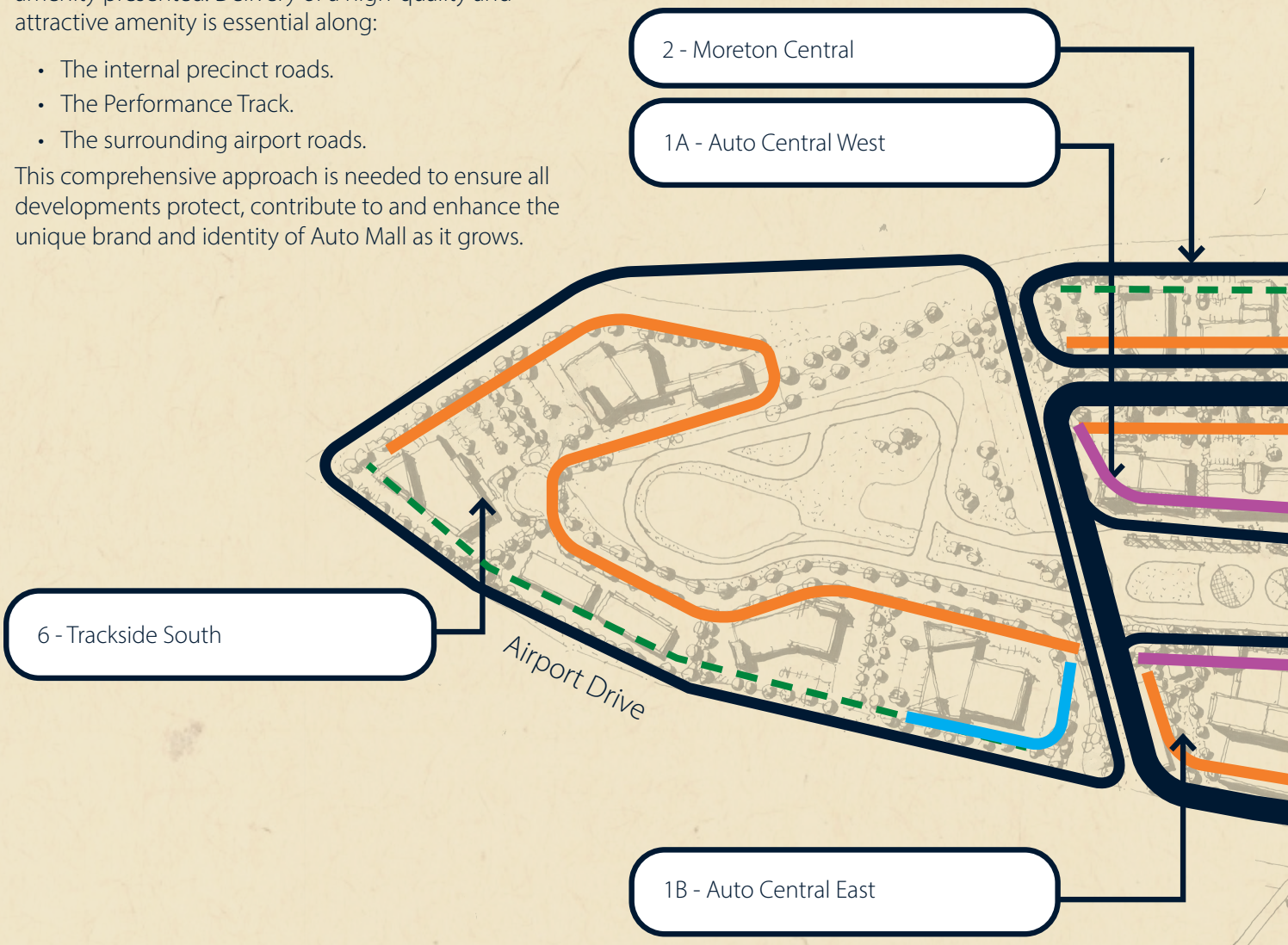
To manage risk and maximise opportunity for all, development needs to consider carefully its relationship with lot edges and the character and quality of the amenity presented. Delivery of a high-quality and attractive amenity is essential along:

- The internal precinct roads.
- The Performance Track.
- The surrounding airport roads.

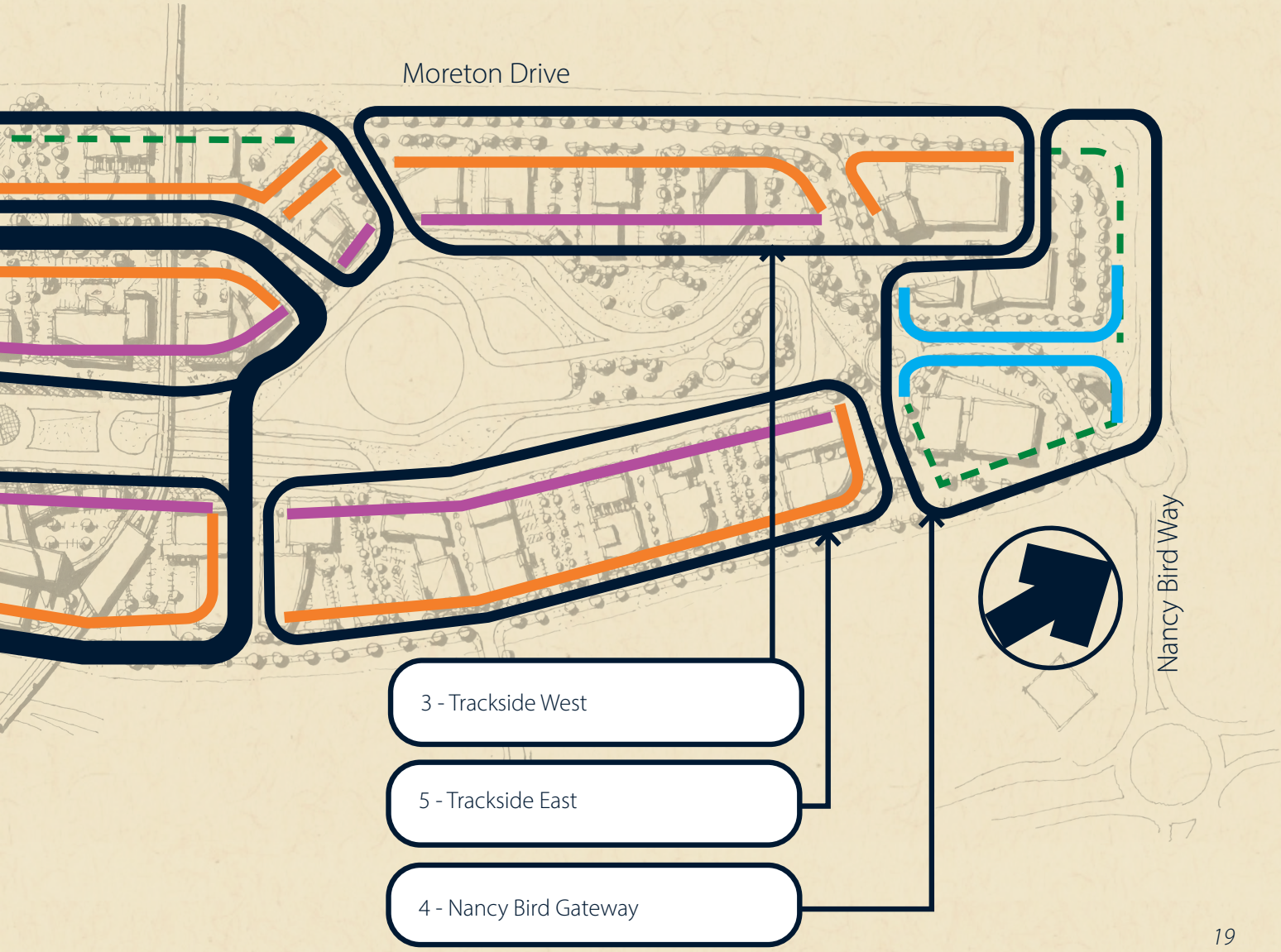
This comprehensive approach is needed to ensure all developments protect, contribute to and enhance the unique brand and identity of Auto Mall as it grows.

A key site planning objective is therefore to deliver buildings that define and address the street with quality frontages, using building facades to enhance the Auto Mall experience by creating exciting and unique business and retail addresses both within the precinct and to the external road network.

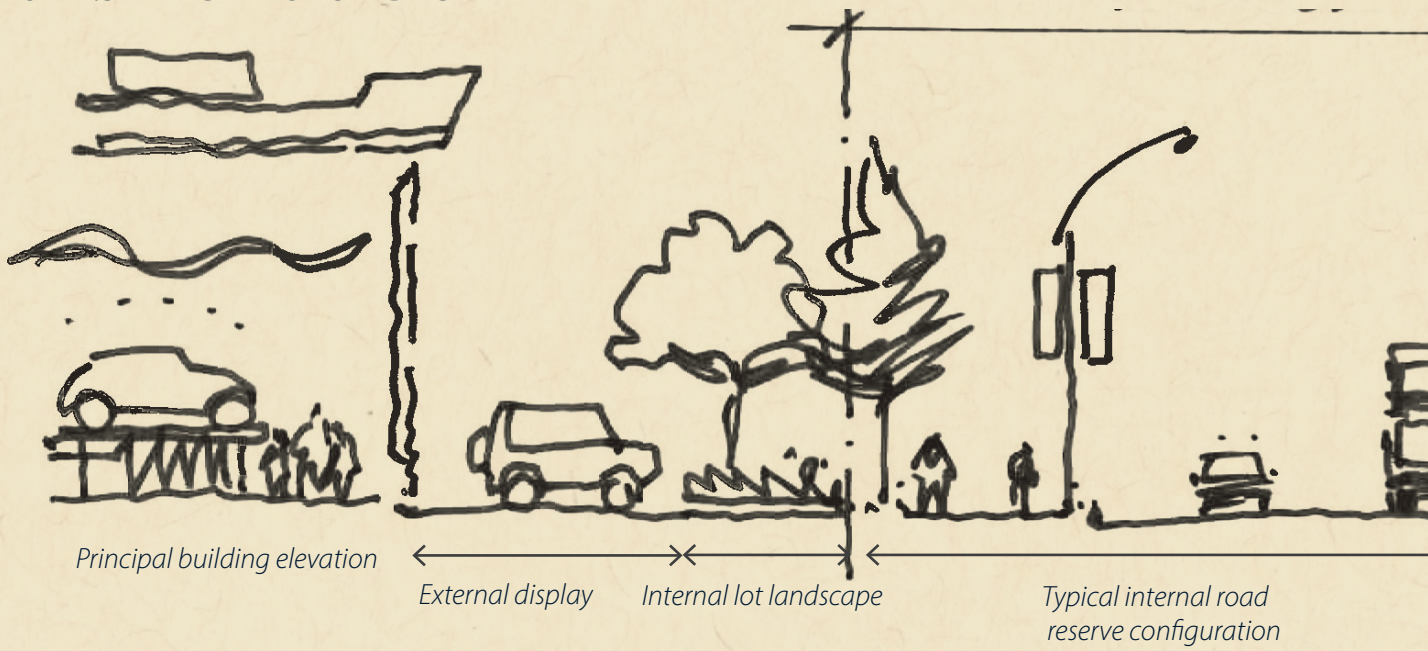
The consistent application of built form principles will enhance the precinct streetscape and maximise opportunities for promotion and interaction between precinct users and facilities and define a visually distinctive and exciting destination at the airport.



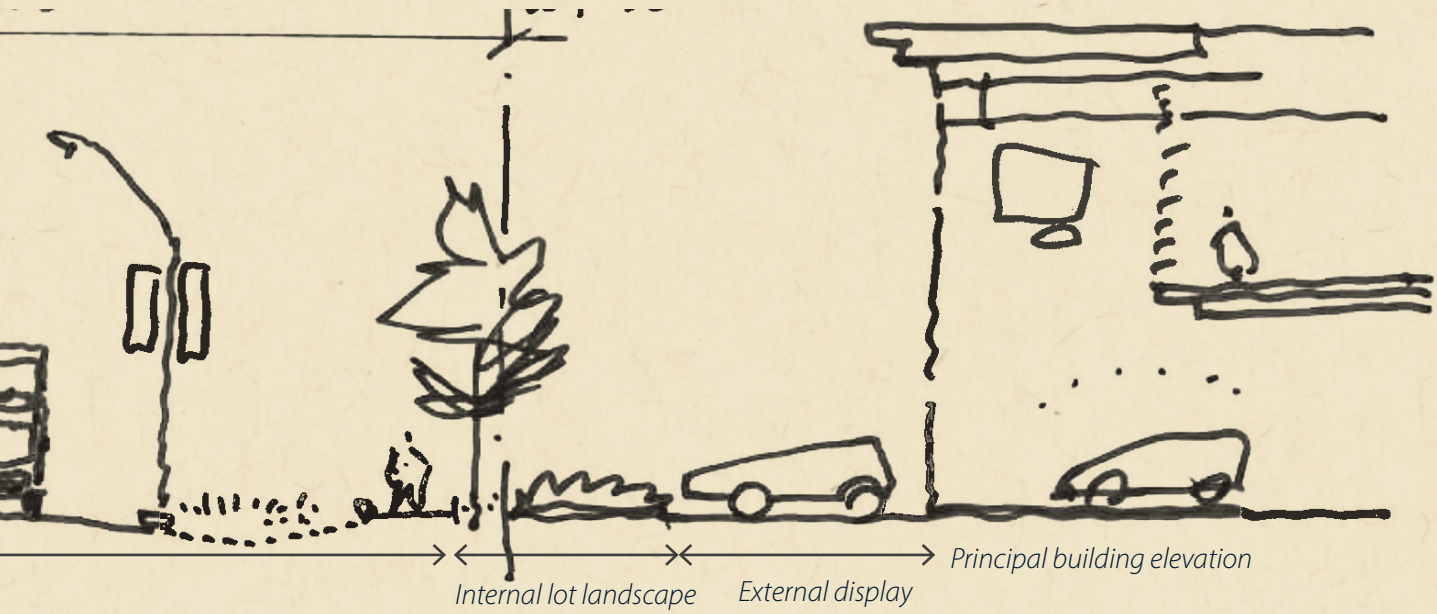
Address type	Key design considerations
Auto Mall Precinct	Characteristics - Typically viewed at high speed, and by the majority of the airport's passengers and visitors as they make their way between terminals. Role - Along these highly visible precinct edges the design treatment presents the quality and character of the BNE Auto Mall Precinct brand to all. These edges present opportunities for simple and bold scale planting and architectural treatments.
Internal Avenues	Characteristics - Typically viewed at moderate to low speeds by retailers and their customers, as they explore opportunities at the Auto Mall, these avenue edges provide a welcoming, well ordered, legible and high quality street address for businesses. Role - These avenue edges provide the principal visual and physical introduction between businesses and clients, and retailers and customers.
Trackside	Characteristics - Development edges define and address the Performance Track to enhance the precinct experience, with strong visual activation of the track. Role - The Performance Track is a key defining characteristic of the precinct. Along these highly visible edges design treatments contribute to establishing a distinctive identity for the track, offering activation that supports customer experiences both on the track and viewing the track from individual businesses.
Threshold/ Gateway	Characteristics - Typically viewed at moderate to low speeds by retailers and their customers as they enter the precinct. These edges define the arrival into the Auto Mall Precinct and introduce the precinct qualities and character. Role - Along these highly visible precinct edges the design treatment reflects the quality and characteristics of the precinct brand and present a welcoming, well ordered, legible and high quality street address.



A1.4 & A1.5 TYPICAL LOT SETBACK



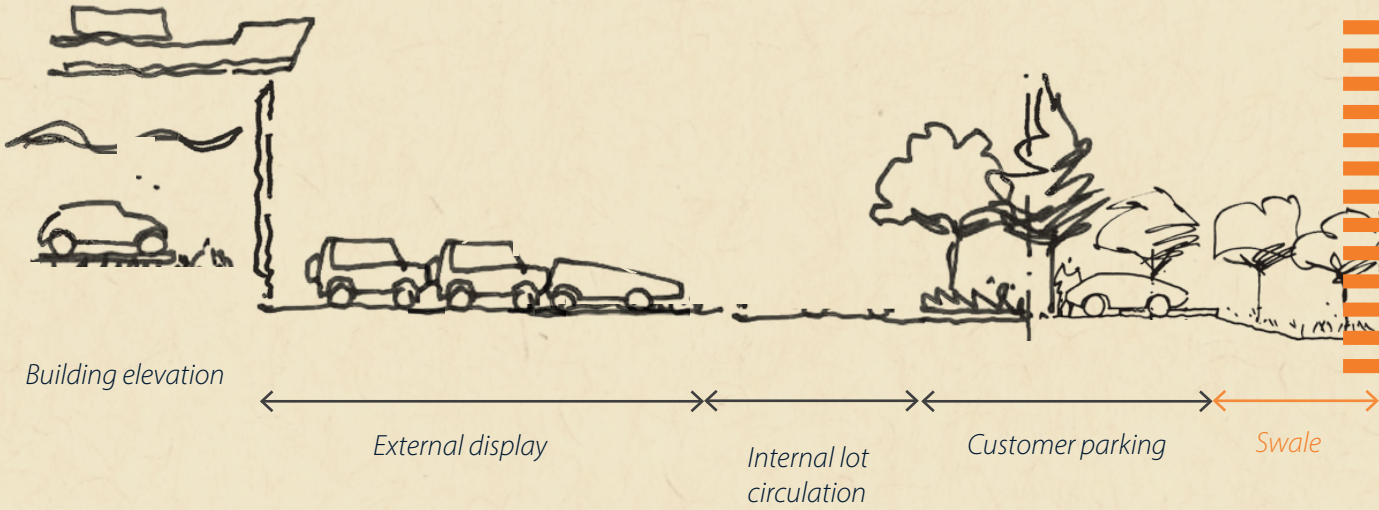
A1	GENERAL SITE PLANNING	
Ref	*Initiative*	*Planning parameters*
A1.1	*Respecting the investment and amenity of neighbours*	Buildings and ancillary structures do not negatively impact on the amenity of adjoining properties and create functional spaces. All building setbacks, measured from the outermost wall: • Contribute positively to the urban form and function of the precinct by creating a well defined street corridor. • Are consistent with surrounding development and streetscape. • Do not compromise existing service corridors or infrastructure delivery. • Consider and incorporate emergency services access requirements. • Consider specific building requirements, particularly fire protection. • Do not adversely impact on the amenity of public spaces. Design and future maintenance of the vegetated stormwater management swale enhances landscape amenity at the common boundary.
A1.2	*Lot types*	Across the precinct three principal lot types have been identified, each with distinct planning considerations relating to the orientation of principal building elevations: • Trackside. • Internal street address. • External street address.
A1.3	*Super lots/ Amalgamated lots*	Where a number of adjacent lots are within the same ownership the following planning requirements apply: • Avoid long (multi-franchise) showrooms on street boundary. • Maintain overland flow paths for stormwater. • Build over trunck stormwater prohibited. • Maximum lot dimension permitted without substantial landscape break 200m (Inclusive of stormwater swales). • Stand-alone single brand showrooms are preferable. • Shared workshop and service facilities are acceptable. • Set aside land from lots for substation requirements.



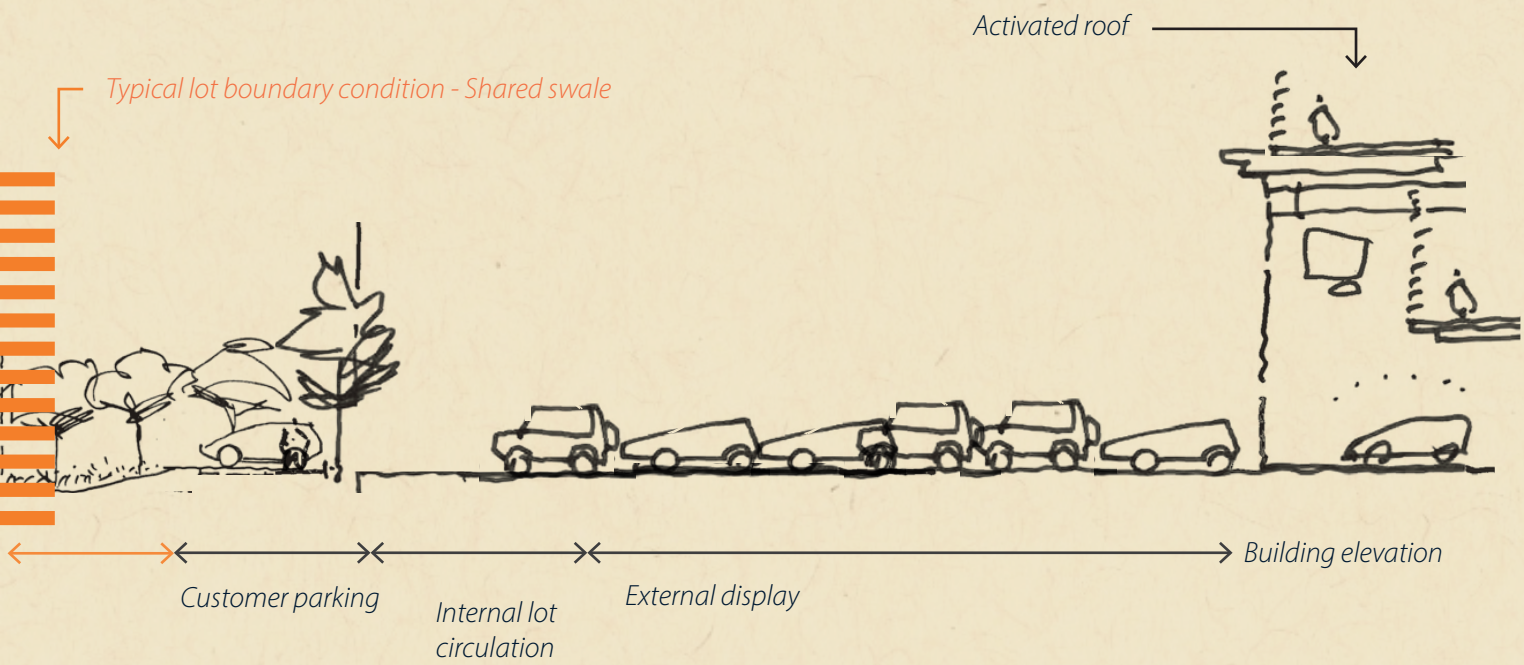
A1.4 Front setbacks

A consistant 9m building setback is required from the principal street address and lot boundary. The setback includes a minimum 3m wide strip for landscape, to establish an attractive and well defined address to the property. This setback area can also be used to display a single row of vehicles.

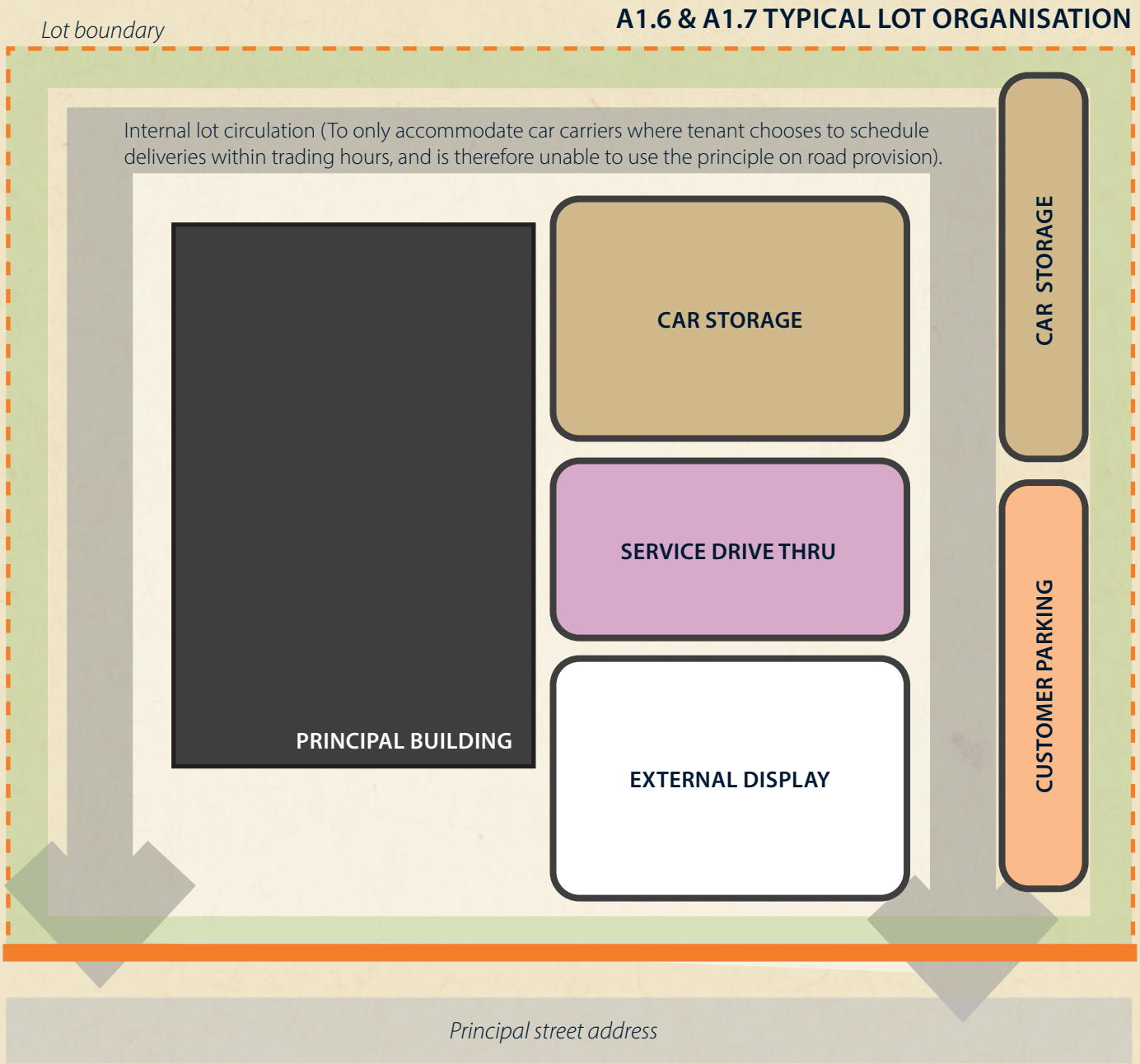
A1.6 & A1.7 TYPICAL LOT ORGANISATION



A1	GENERAL SITE PLANNING	
Ref	*Initiative*	*Planning parameters*
A1.4	*Setback to the internal avenue*	9m setback from front boundary, including a 3m landscape zone to establish an attractive and well defined street address to the property. For a corner site, setbacks maintain required sightlines for all road users. Parameter does not apply to Auto Central neighbourhood.
A1.5	*Setback to airport roads*	Due to the significant visibility of lots, on all sides, buildings to provide active frontage to surrounding external airport roads and to include an optimum 5m landscaped edge (minimum permitted 3m) to ensure an attractive and tidy character is presented, unless otherwise approved by BAC.
A1.6	*General building position*	Site levels are not to be adjusted without BAC approval. BAC provides Minimum Development Levels (MDLs) based on a risk based assessment of flood immunity. An adopted MDL for the Auto Mall to provide equivalent Q100 flood immunity is 3.5m Airport Datum (AD). Freeboard component allowance of 300mm above MDL shall be considered.

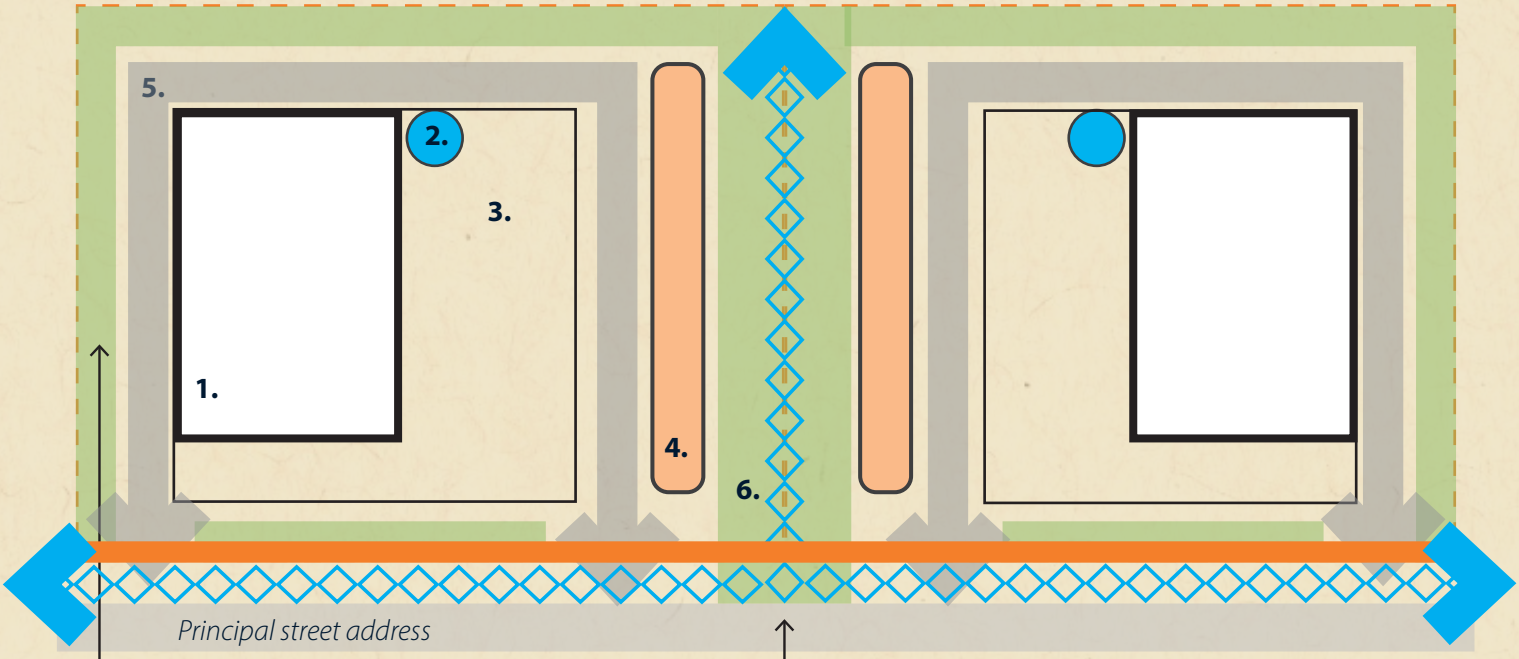


A1.6 & A1.7 TYPICAL LOT ORGANISATION



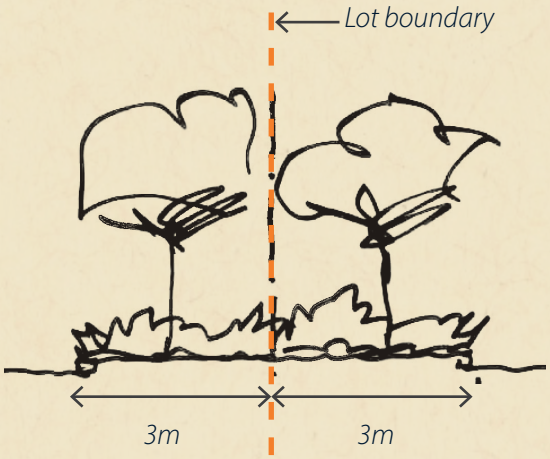
A1	GENERAL SITE PLANNING	
Ref	*Initiative*	*Planning parameters*
A1.8	*Boundary treatments*	**Side and rear boundaries - The following should be adhered to unless otherwise approved by BAC:** • To be designed to enhance visual amenity and clearly delineate development edges. • Use planting to screen boundary fencing. • Accommodate at least one passively irrigated tree every 7m. • Incorporate grasses and groundcovers. • Include flush kerbs to passively irrigate plants. • A 5m wide landscape strip is to be provided at rear. **Front boundaries** • To be designed to create a welcoming and high quality "address" and enhance the visual amenity of the street. • A consistent landscape palette and character should be adopted to create a strong sense of cohesion across the precinct. • Development must provide a 3m wide (minimum) landscape strip from the property boundary. • Corner sites should provide landscaped setbacks to both street frontages. • Front setback areas should be free of structures such as rainwater tanks and outbuildings but may accommodate compliant signage, where appropriate. **Track boundary** • Maintain views to track. • Ensure the safety of track users. • Wild grasses, groundcover and shrub planting permitted.

A1.8 BOUNDARY TREATMENTS - ILLUSTRATIVE PLAN & SECTIONS

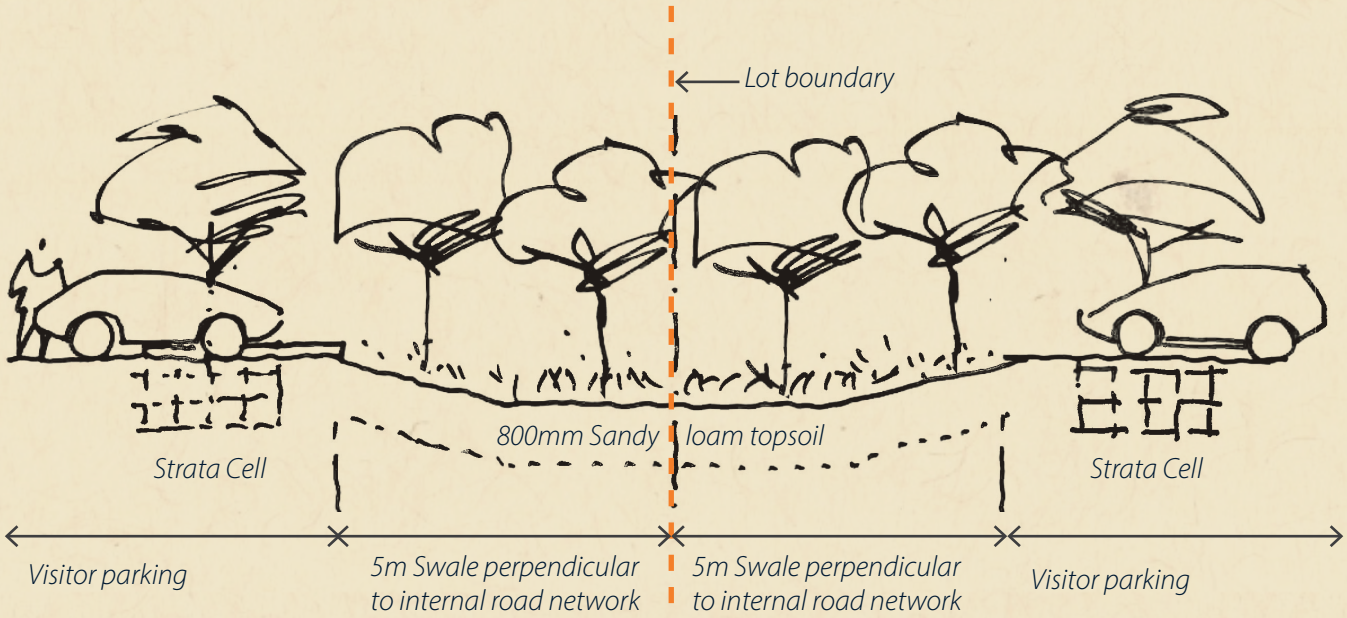


1. Principal building
2. Rain water tank
3. General parking zone
4. Customer parking
5. General circulation
6. Swale (5m per lot)

Boundary treatment opposite swale



Boundary treatment- Vegetated stormwater management swale



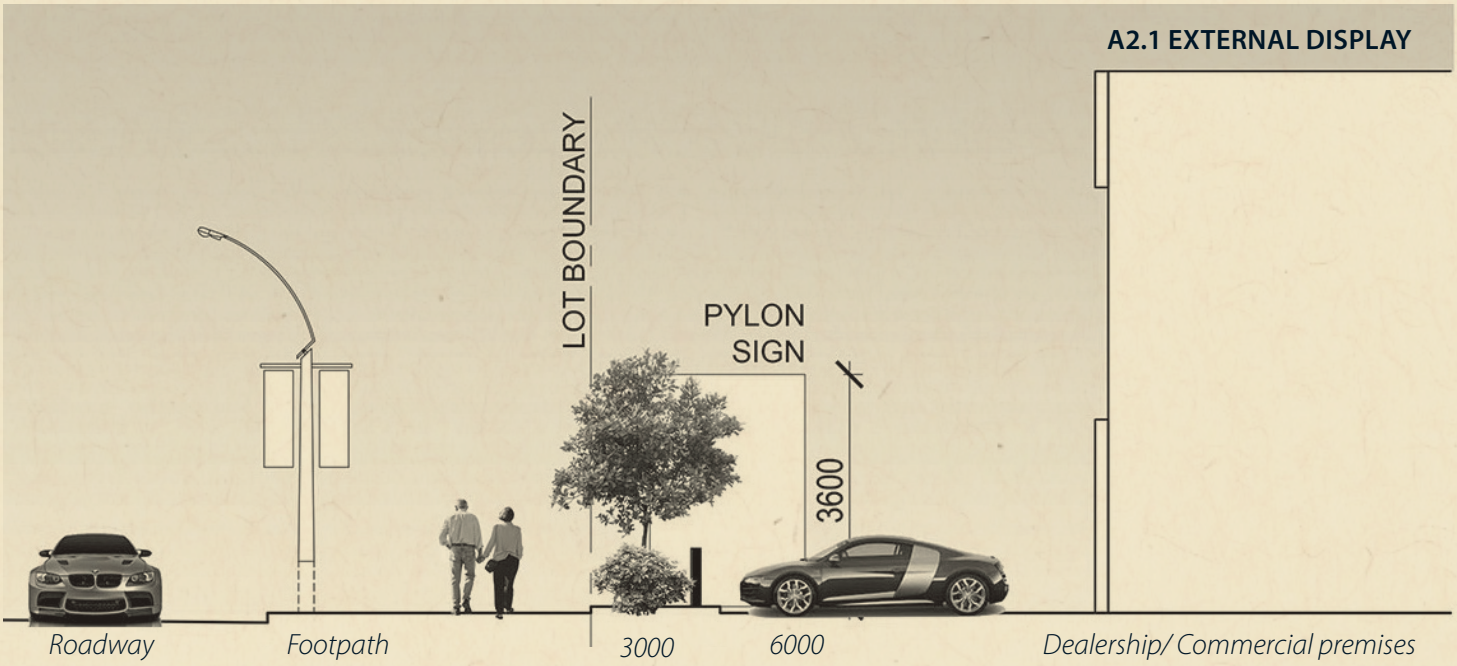
A2.1 External Display

The principal commercial frontage presents a high-quality and clutter-free retail presence to the street.

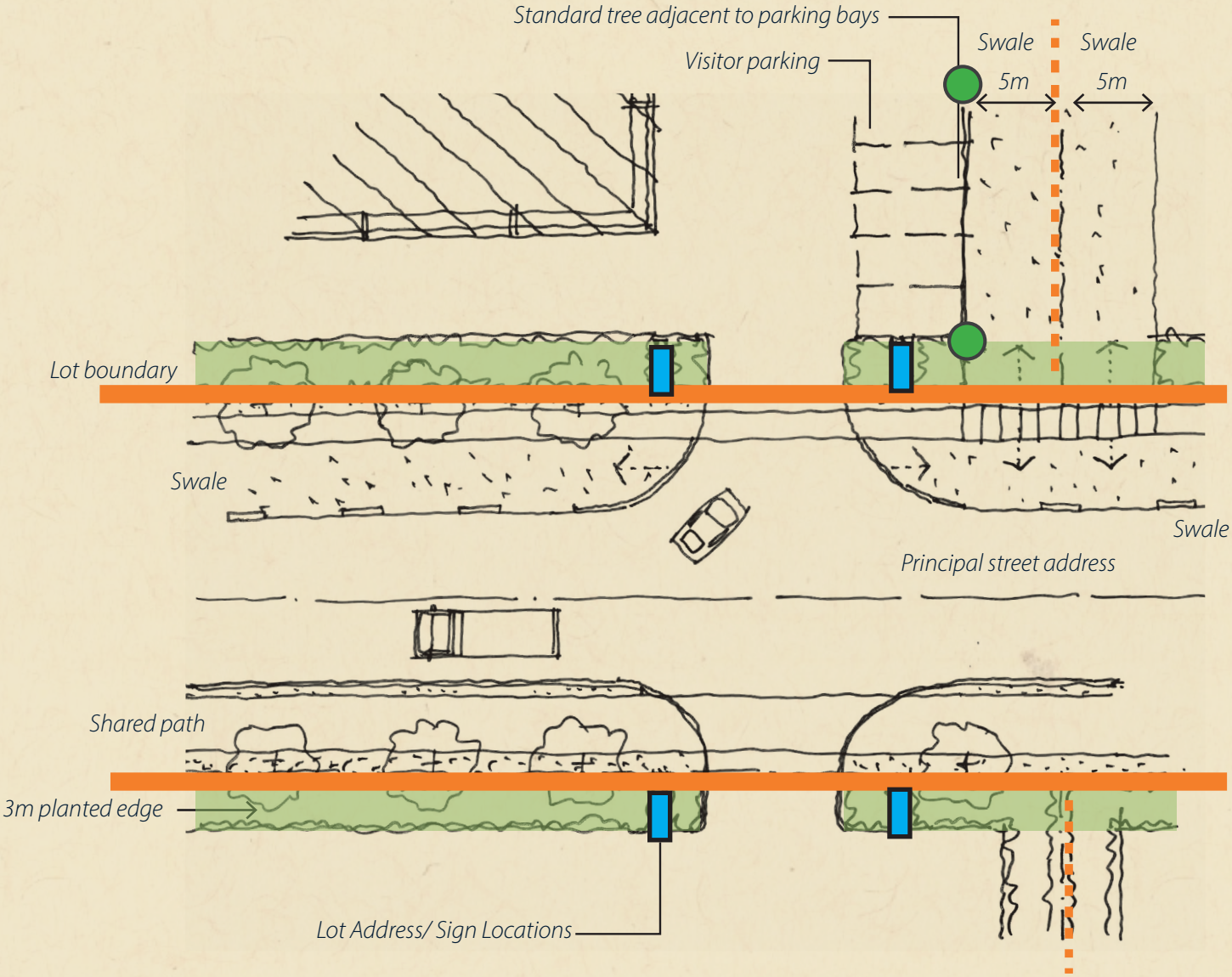
Only one row of cars is permitted to be displayed to the front of the showrooms, unless otherwise approved by BAC. Proponents to submit illustrations to demonstrate the outcomes of proposed revision.

A2	SPATIAL PLANNING FOR VEHICLES	
Ref	*Initiative*	*Planning Parameters*
A2.1	*External display*	• Only one row of cars is permitted to be displayed to the front of the showrooms, unless otherwise approved by BAC. Proponents to submit illustrations to demonstrate the outcomes of proposed revision. • Majority of external display to be to side of showroom.
A2.2	*Car parking*	Parking areas to be designed to: • Create welcoming and comfortable space for staff, visitors and customers • Provide a consistent landscape language across all lots to convey a strong sense of unity throughout the development • Enhance visual amenity of overall development • Reduce impermeable surface area where possible to assist heat island reduction aspirations, energy use minimisation and other sustainable initiatives • Visitor/customer car parking to be positioned at the front of site, and along the side boundary • Specific car parking provisions/requirements as defined in BAC Planning Guidelines • Car parking must not be accommodated within the designated landscape setbacks Disabled parking provision to: • Be provided at a rate of one space per 50 standard parking spaces, with a minimum of one space a requirement • Be in accordance with the latest Australian Standards • Be provided as close as possible to the main entrance of buidings. Parking space design to: • Be a light coloured concrete surface treatment • Provide parking delineation in a contrasting concrete (concrete to be jointed segmented slabs) • Incorporate one passively irrigated shade tree every three car spaces (Unless otherwise approved by BAC). • Incorporate grasses and groundcover planted accent areas to support passive irrigation • Incorporate flush kerbs to support the passive irrigation of plants • All car parking to be accommodated on site.

A2.1 EXTERNAL DISPLAY



A1.6 BUILDINGS DEFINE A STRONG STREET ADDRESS

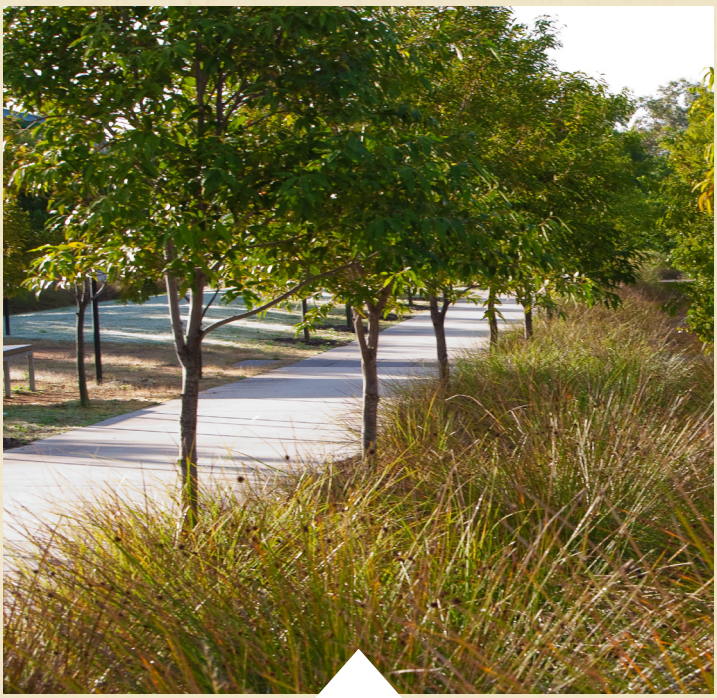


A3.4 Recycled Water/Harvesting

Water storage tanks are required for all sites to harvest rainwater from roofs.

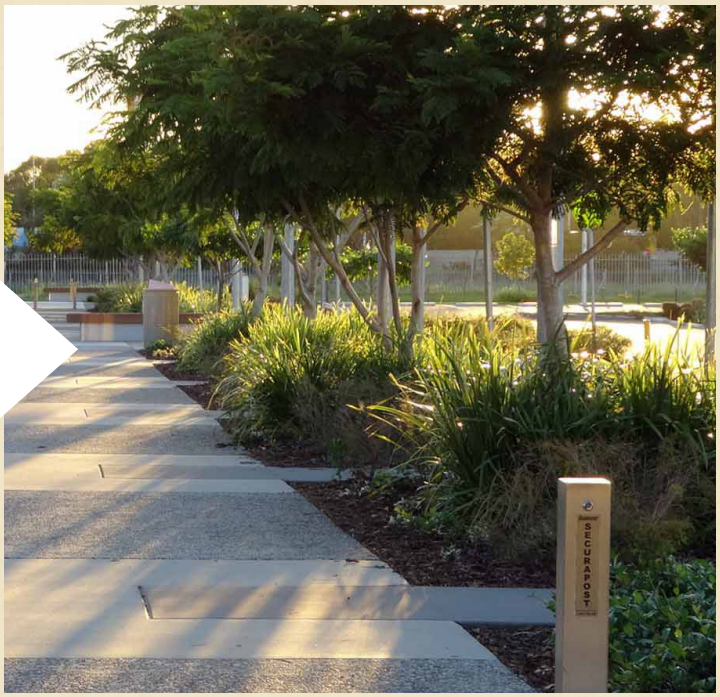
If tanks are visible to the public, they must be of a high-quality specification (pop riveted steel tanks) and their design and setting carefully considered.

A2	SPATIAL PLANNING FOR VEHICLES	
Ref	*Initiative*	*Planning Parameters*
A2.3	*Car storage*	Position car storage and service parking to ensure a high level of visual amenity and a consistent standard of street address is achieved, and protect the distinct character of the Auto Mall experience. Note - Planning requirements for car storage do not apply to general car parking areas. See A2.2.
A2.4	*New vehicle deliveries*	All unloading and loading of car carriers must be undertaken within designated areas located in the road reserve. Unloading and loading of car carriers will only be permitted during hours approved by BAC.



A2.2 Well-defined and comfortable parking

Exploit opportunities for visitor parking to be integrated into well shaded, safe and attractive landscape edges.



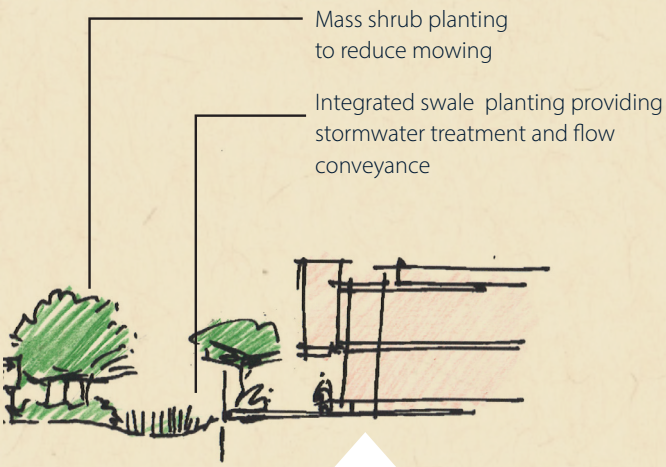
Tree Pits

In order to successfully establish trees in extensive areas of hard standing, use passively irrigated tree pits designed to capture and treat stormwater.

Example of passively irrigated tree with suitable soil volume under pavement (Citygreen strataflow system).

Source: Strataflow Treepit (Citygreen - Urban Landscape Solutions)

A3	LANDSCAPE INFRASTRUCTURE & STORMWATER MANAGEMENT	
Ref	*Initiative*	*Planning Parameters*
A3.1	*General* Stormwater Management	Deliver excellence in sustainable water management to provide stormwater quality and support a green resilient landscape. Each development site to participate in precinct stormwater management strategy which will achieve the following minimum reductions in total pollutant load, compared to untreated stormwater run-off: - 80% reduction in Total Suspended Solids (TSS). - 60% reduction in Total Phosphorus (TP). - 45% reduction in Total Nitrogen (TN). - 90% reduction in Gross Pollutants >5mm. (Source: Post construction phase - stormwater management design objectives (Table B), State Planning Policy (SPP) – Water Quality) • On-site drainage to be designed for Q10 events • Site occupier to ensure no adverse impacts to wider precinct stormwater management strategy • All overland flow paths to be retained.
A3.2	*Landscape Outcomes*	• Vegetated Stormwater Management Swales will be required at regular intervals between lots for site drainage. • Swales are to be provided at boundaries perpendicular to the internal road network. The Swale corridor should be: • 5m wide and be located adjacent to the 5m corridor provided in neighbouring lots to achieve one swale with a total width of 10m. • Generally located at approximately 200m maximum intervals to form part of the precinct wide stormwater management strategy. (Refer also to A1.3) • Swales to be heavily vegetated with suitable plant and tree species (Refer to BAC Landscape Setting Strategy) • To be designed to include 800mm depth of sandy loam topsoil to support plant health and stormwater treatment. • To include a maximum of two crossovers through each swale • To include flush kerbs to passively irrigate plants • Weeds managed to achieve less than 5% weed cover. No Class 1, 2 or 3 weed species (as per the Queensland Government Declared Pest Plants) • Adequate establishment period of no less than 12 weeks • Regular lot maintenance to reduce the risk of attracting wildlife • Maximum slope on batter to be 1:3 • Minimum base of the Swale to be 1m.



Source: Graham Gambie, Parks & Recreation Superintendent, Gladston Ports Corporation Ltd.

A3.1 General stormwater management

Look for opportunities to provide stormwater treatment in landscaped areas to provide multiple benefit including shade and amenity.

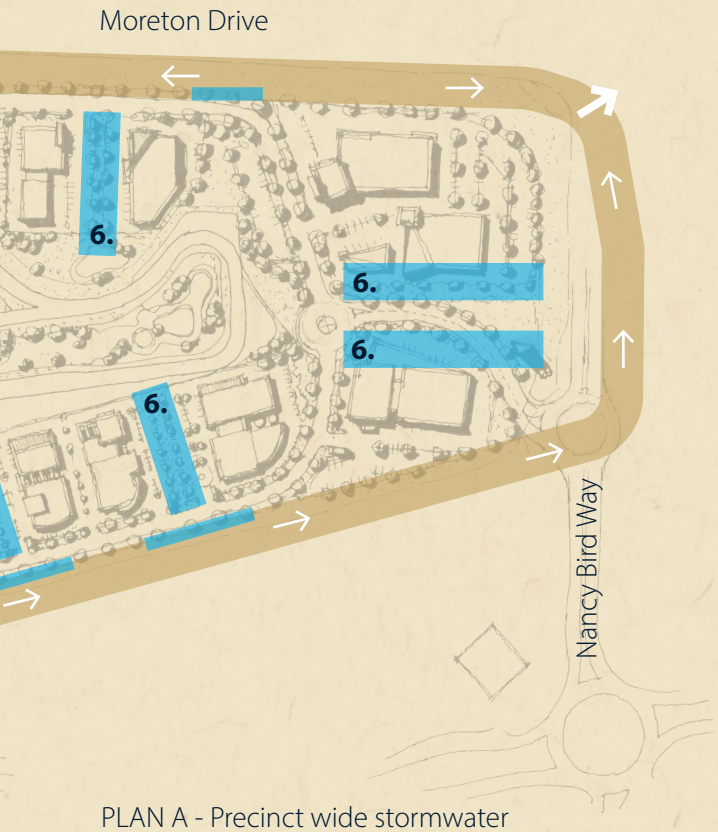
Landscape value

Passively watered landscapes, where surface runoff is directed to landscape areas provide multiple benefits to on lot design:

- Reduced costs as a portion of the stormwater quality treatment is provided within the required landscape corridor.
- Improved tree health, landscape amenity and lot value.
- Reduced demand on potable water.
- Best practice in climate change mitigation through increased shade canopy and cooler, well irrigated landscapes.
- Healthy landscapes require less maintenance.

A3.1 GENERAL STORMWATER MANAGEMENT STRATEGIES - INDICATIVE ILLUSTRATIVE PLANS

A3	LANDSCAPE INFRASTRUCTURE & STORMWATER MANAGEMENT	
Ref	*Initiative*	*Planning Parameters*
A3.3	*Stormwater Quality*	Demonstrate that all impervious areas receive treatment prior to discharge. Look for opportunities to provide stormwater treatment in landscaped areas that provide multiple benefit (e.g. amenity and shade). Acceptable Solution: • Maximise opportunities for surface runoff to be directed to passively watered landscapes and the vegetated stormwater management swale through site layouts which encourage multiple short drainage paths. • Inclusion of bio retention within the base of the swale to optimise removal of pollutants • Provision of passively irrigated tree pits designed to capture and treat stormwater
A3.4	*Potable Water Reduction*	• Water storage tanks are required for all sites to harvest rainwater from roofs • Site occupier to install minimum 100kl rainwater tank to be plumbed for re-use (toilets, carwash and irrigation). This sizing should be optimised to achieve 70% volumetric reliability. • If tanks are visible to the public, they must be of a high-quality specification (pop riveted steel tanks) • Visible tanks must match the colour palette of the adjacent building • Tanks to be used for first flush toilet systems, irrigation and car washing



PLAN A - Precinct wide stormwater management strategy illustrating proposed location for swales

Stormwater Strategies

- Vegetated stormwater management swale
- Surface drainage flow lines to encourage multiple short drainage lines
- 100KL Rainwater tank
- Stratflow Street Tree Cells or similar under visitor parking

Key

1. Principal building

2. Retail frontage

3. General parking zone

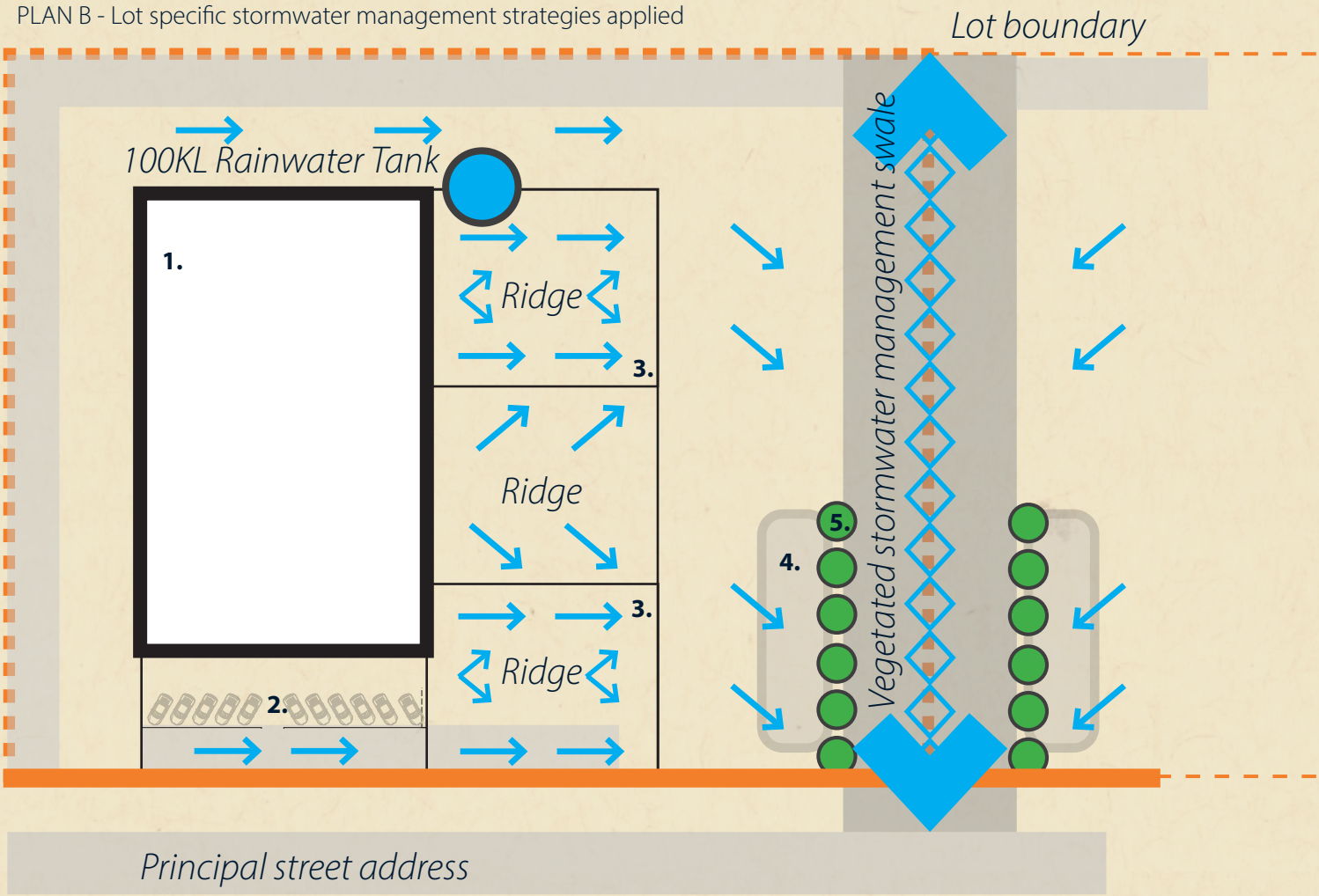
4. Customer parking

5. Irrigated tree pits and planting - Trees to be planted at minimum 7m intervals along side and rear boundaries

6. Swales & Rain Gardens - Recommended location for precinct wide stormwater mangement swales

7. External drainage channel and treatment swale with direction of flow

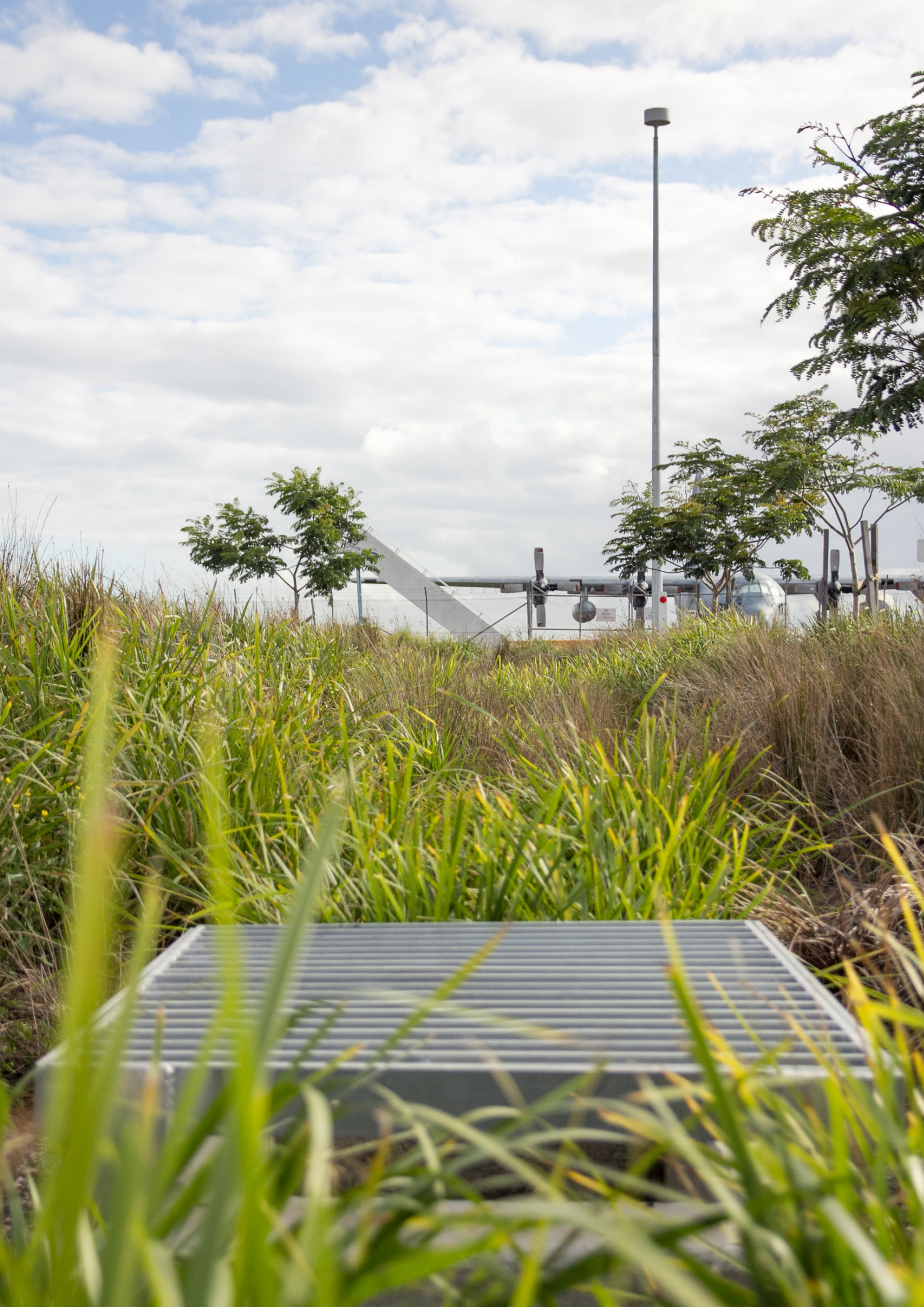
PLAN B - Lot specific stormwater management strategies applied



A3.5 General landscape design requirements

A consistent and simple palette of material to be used to convey a strong sense of unity and cohesion throughout the development

A3	LANDSCAPE INFRASTRUCTURE & STORMWATER MANAGEMENT	
Ref	*Initiative*	*Planning Parameters*
A3.5	*General Landscape Design Requirements*	• All planting to be in accordance with the Landscape Setting Strategy • A consistent and simple palette of material to be used to convey a strong sense of unity and cohesion throughout the development • High-quality materials to be used to ensure minimal and appropriate maintenance requirements and avoid material failures • Planting design and species choice to maximise shade and tree cover • Species to be as per the Landscape Setting Strategy "BNE Destinations" Thematic Landscape Areas Plant Guide
A3.6	*Management of Fauna*	• To manage risk and protect airport operations planting choices should be made to avoid creating new habitat and food sources for fauna.
A3.7	*General Materials Choice*	Materials choice to consider the following requirements: 1. Have a long life and low toxicity 2. Have a low environmental footprint 3. Be locally sourced where possible 4. Materials to be suitable for the marine environment of the airport.



B | CREATING A GREAT PLACE TO DO BUSINESS

B1 Building design

B 1.1 Building heights

B 1.2 Architectural design

B 1.3 Materials

B1.4 Building signage

B1.5 Front of house design

B 1.6 Track sites

B1.7 Architecture

B1.8 Trackside sites

B1.9 Screening of services

B1.10 General sustainability commentary

B2 Lighting

B2.1 External lighting

B2.2 Internal lighting

B3 Fencing

B3.1 Perimeter security

B3.2 Fencing

B3.3 Screening of services

B4 Services and infrastructure

B4.1 Energy efficiency

B4.2 Fire fighting capabilities

B5 Signage and wayfinding

B5.1 Brand/ corporate identity

B5.2 Building identification signage

B5.3 Street identification sigange

B5.4 Promotion on the building

B5.5 Street banners

B5.6 Brand flags

B5.7 Brand pylon signs

B5.8 Exclusions

B6 Access and movement

C6.1 Pedestrian movement

OVERARCHING PLANNING OBJECTIVES

Delivering distinctive, high-quality architecture that contributes to the Auto Mall brand and experience

Building design guidelines provide a basis for a consistent and high-quality built form which enhances the overall experience of the Auto Mall Precinct. The intent is to deliver well designed spaces with high-quality materials which are indicative of the overall precinct.

As the lots have the potential for active frontages at both the front and back boundaries, building designs must present quality facades to the internal precinct roads, the external airport roads and the Performance Track.

Due to the high visibility, it is integral that buildings present high-quality design and finishes on all facades, as they will be seen from multiple angles.

The overall principle of the building design guidelines is to provide high-quality, well designed buildings which create a strong presence and street address. Designing for both frontages of the lots maintains a visual connection to the test track, as the feature of the precinct.

A consistent delivery of such built form will enhance the precinct streetscape and maximise the interaction between the precinct users and the facilities.

Delivering site-wide cohesion and business brand opportunities

Recognising this site as a unique precinct, dedicated to auto retail and driving, the signage guidelines are different to those for a typical public road environment.

The aim of the signage guidelines is to acknowledge the unique nature of the site and provide appropriate design direction that achieves site-wide visual cohesion without inhibiting lot holders' ability to clearly express their business brand and offering.

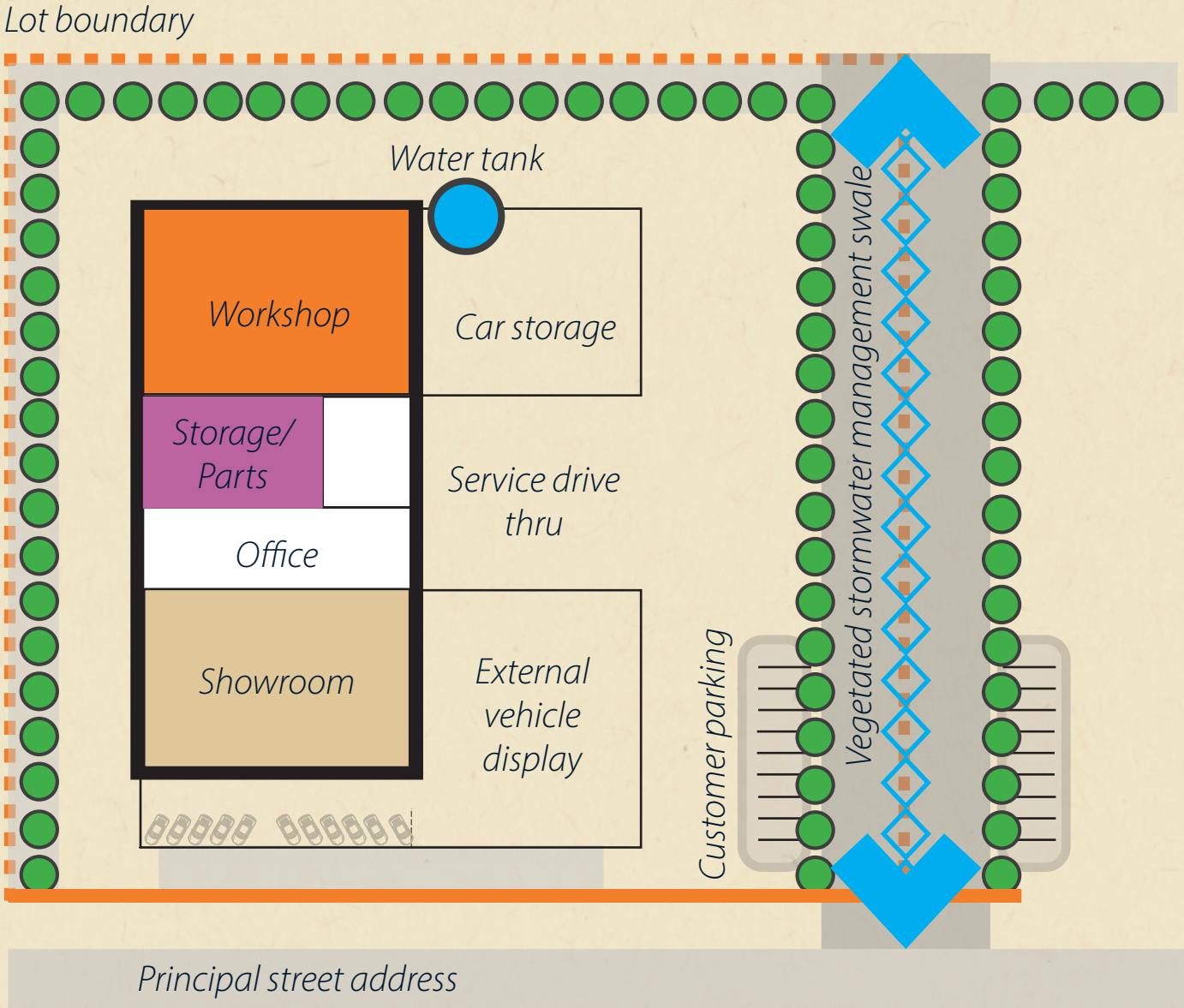
There are three different lot frontage types:

- Internal road - A lot's primary street address is on the internal roads of the Auto Mall. This is the main signage identification point where customers and others will recognise and then access the lot.
- Performance Track - Some lots will address the test track, providing a further opportunity to reinforce brand awareness.
- External major road – A small number of lots address the external road network. The presentation and signage of these lots requires a high level of coordination, with opportunities for bold scale interpretation due to the driving speed along these routes.

B1.4 Building signage

Brand signage must feature on both front and rear facades but must be proportionate to the building height and scale.

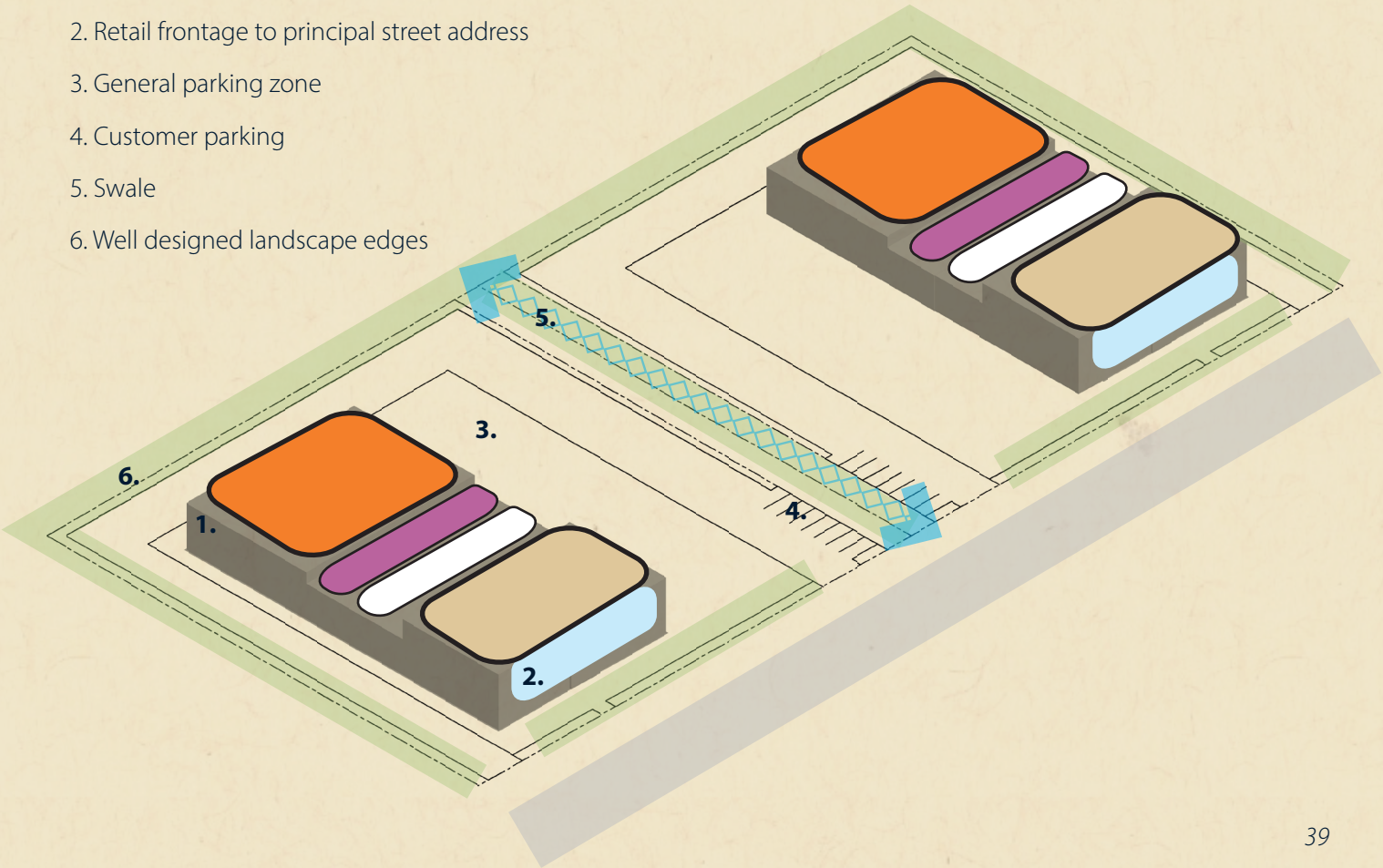
B1.2 BUILDING MASSING - INDICATIVE ILLUSTRATIVE PLAN



B1	BUILDING DESIGN	
Ref	*Initiative*	*Planning parameters*
B1.1	*Height*	• Limited to two-three storeys • Minimum Building height: 7.2m • Maximum Building Height: 12m These heights are applicable to automotive developments within the precinct. The height of other building typologies will be subject to review and approval by BAC.
B1.2	*Building Massing*	• Building massing should be increased at the street edge to promote the visibility of important building facades and help definea strong urban street character. • Buildings accommodating ancillary functions, positioned behind the showrooms, may be of lower volumes with the workshop zone towards the rear boundary replicating the volume of the showroom. This will provide high volume spaces to both the front and rear boundaries, allowing for maximum visibility from the internal and external road ways, or Performance Track.
B1.3	*Materials*	• Quality materials and finishes to complement the overall precinct • Aluminium composite panel that accords with Australian Standards (acceptable fire rating) • Fibre cement and blockwork not acceptable
B1.4	*Building Signage*	• Brand signage to be in proportion to building height • Brand signage must feature on both front and rear facades but must be proportionate to the building height and scale

B1.2 BUILDING MASSING

1. Principal building
2. Retail frontage to principal street address
3. General parking zone
4. Customer parking
5. Swale
6. Well designed landscape edges



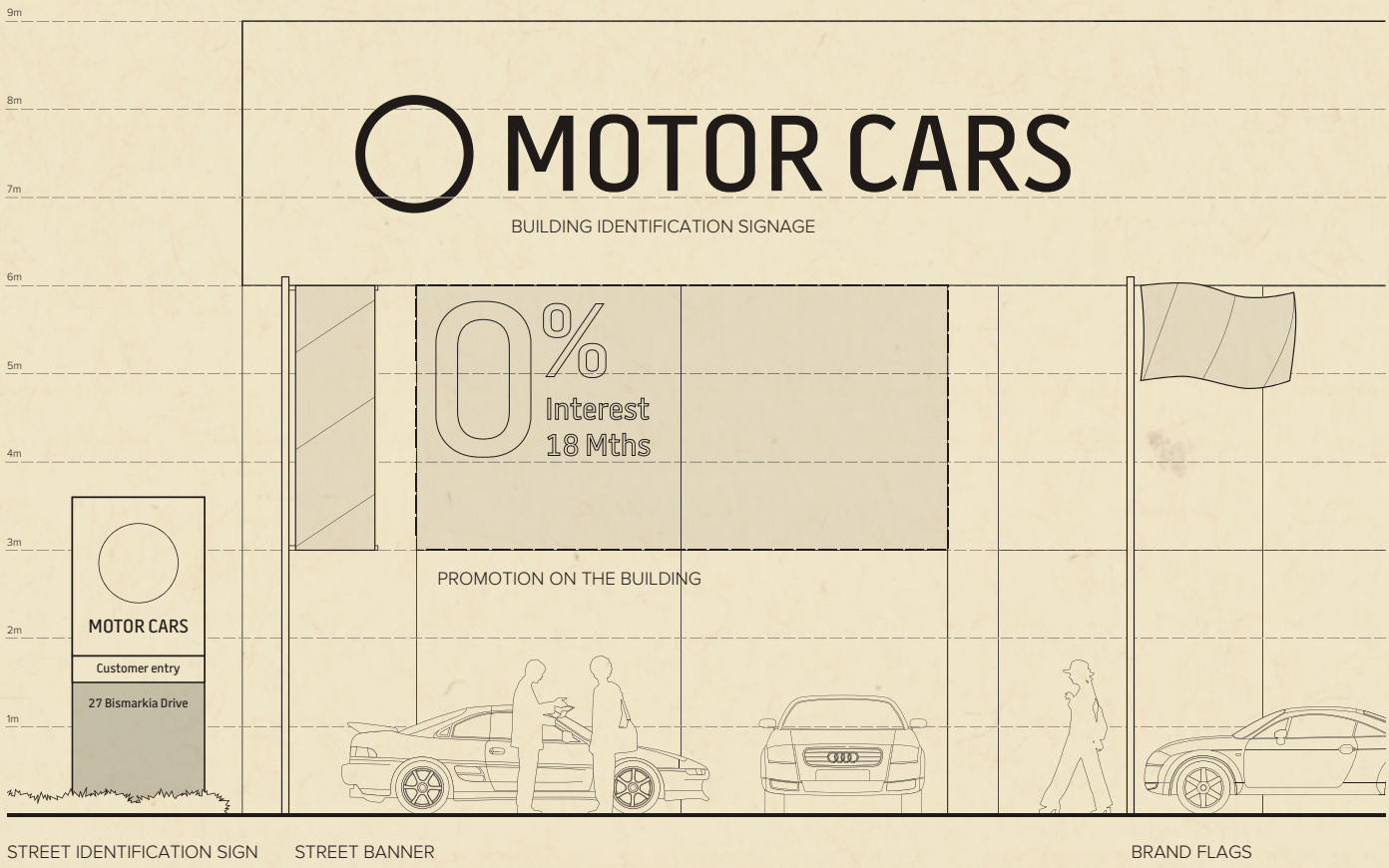
B1.7 Architecture

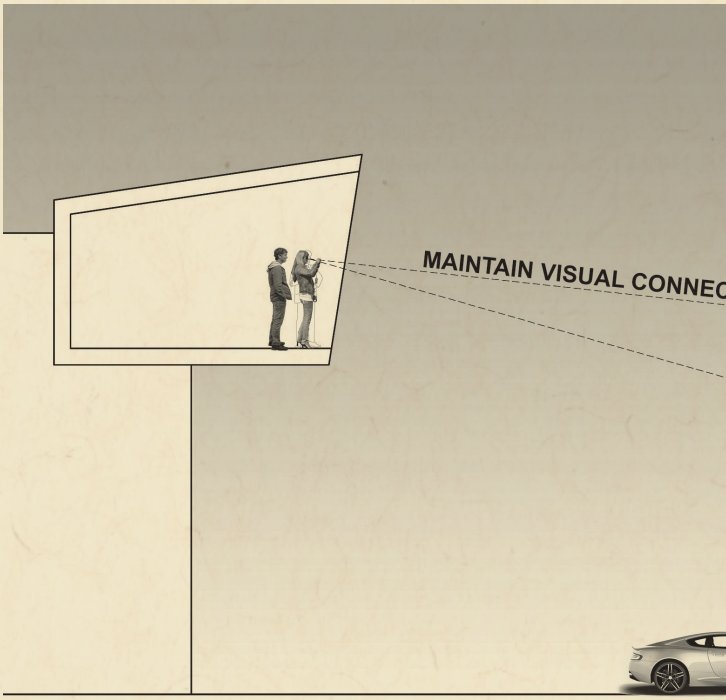
A consistent and simple palette of materials to be used to convey a strong sense of unity and cohesion throughout the development.

Architecture to exploit the opportunity for interesting facades presented by the simple, low scale, large volume footprints.

B1	BUILDING DESIGN	
Ref	*Initiative*	*Planning parameters*
B1.5	*Front of House*	• Present high ceiling showroom spaces to address the street • Provide large volume showroom spaces with primarily glazed facades facing the street edge • Brand entry statements to face street to create the point of address and entry to the showrooms
B1.6	*Roof*	• Opportunities to activate the roof space and create customer viewing terraces • Roof sheeting to be Colorbond - White or Surmist or equivalent (To assist with compliance with Section of the Building Code of Australia dealing with energy efficiency for Class 2 – Class 9 buildings). • Low glare materials required.
B1.7	*Architecture*	• Buildings should be designed to deliver a high standard and distinctive architecture • A consistent and simple palette of materials to be used to convey a strong sense of unity and cohesion throughout the development. • Architecture to exploit the opportunity for interesting facades presented by the simple, low scale, large volume footprints. • Architecture should be responsive to the subtropical climate of the region • Architecture should exploit opportunities to incorporate shading devices in the design and articulation of elevations and entrances • Shading devices must be incorporated in buildings and must not detract from the amenity of the precinct (i.e. no shade cloth, hail netting, carports etc.).

B1.5 FRONT OF HOUSE

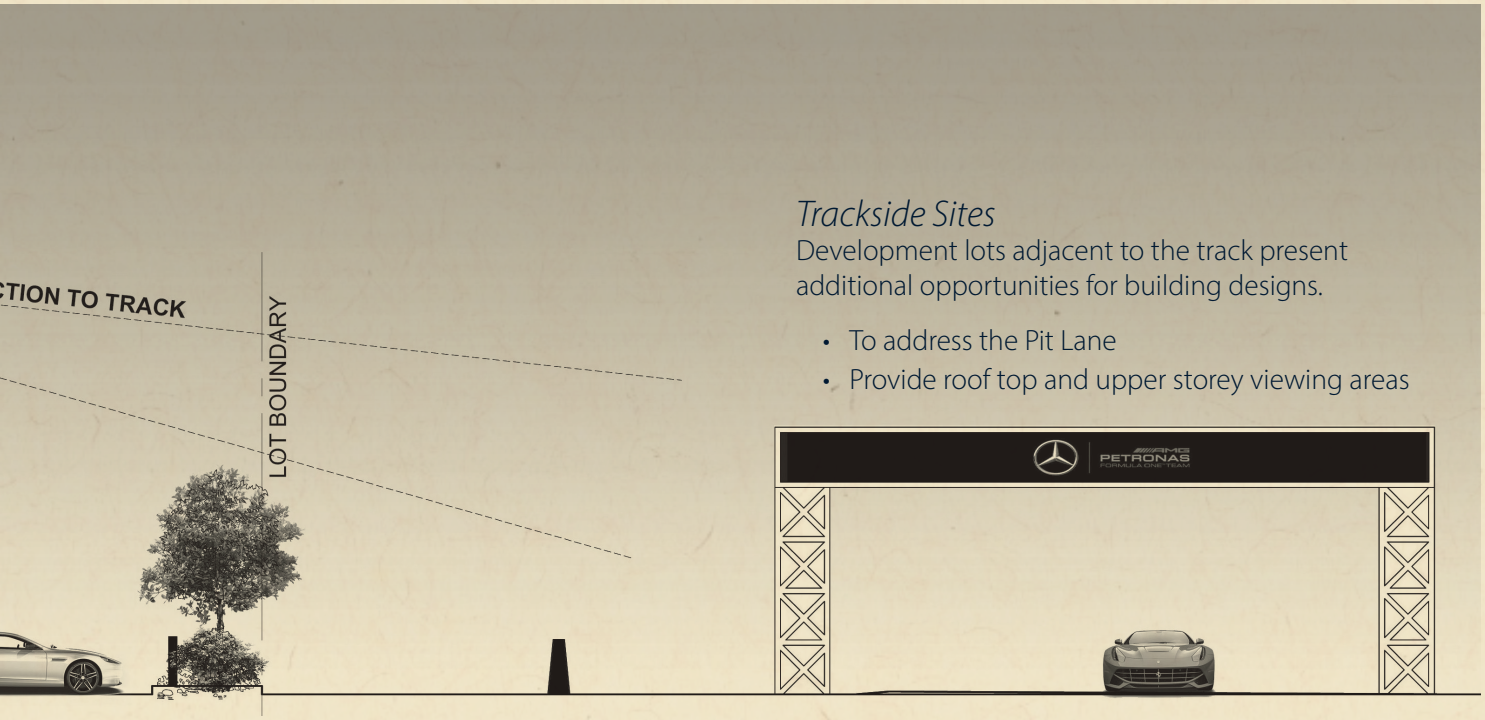




B1	BUILDING DESIGN	
Ref	*Initiative*	*Planning Parameters*
B1.8	*Trackside sites*	• To acknowledge the Performance Track in back of house design. • Brand façade signage to face both street and track. • Raised viewing areas at the back of the building to view track use are encouraged for trackside lots.

B2.2 Internal lighting

Brand signage must feature on both front and rear facades but must be proportionate to the building height and scale.



Trackside Sites

Development lots adjacent to the track present additional opportunities for building designs.

- To address the Pit Lane
- Provide roof top and upper storey viewing areas

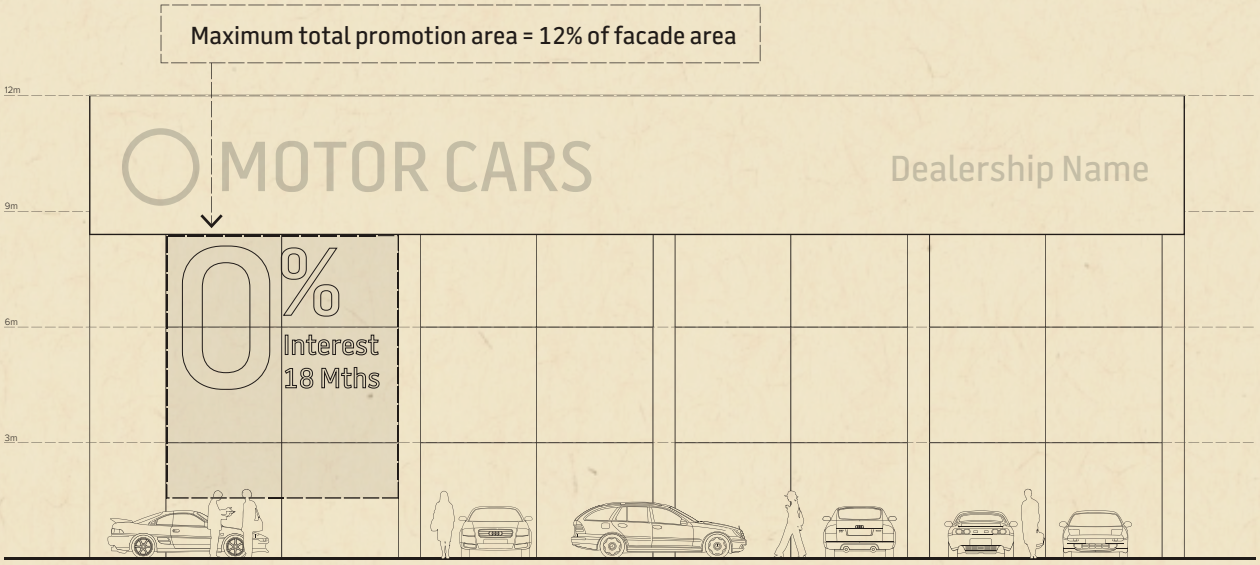
B1	BUILDING DESIGN	
Ref	*Initiative*	*Planning Parameters*
B1.9	*Screening of services*	• Plant decks, air conditioning systems, substations, refuse areas and all back of house services are to be screened from view using aluminium louvres or aluminium battens. • Booster assemblies must be designed to complement the high quality and distinctive architectural aesthetics of the building.
B1.10	*General sustainability commentary*	Best practice Green Building design is expected Specific considerations include but are not limited to the following: • The use of solar power is encouraged. • The use of recycled water for wash bays is encouraged. • Ensure sufficient space is planned for in refuse areas to accommodate recycling. • All trade bays and wash bays are to be connected into the sewage system. • Tenants have a ground lease with BAC. • There is sufficient electrical infrastructure on the airport to support the installation of solar power systems. • The renewable energy electrical designs ensures: – There is no export from the installation into the BAC network. – Safe shut down and restart on the loss of mains supply. – Required power quality criteria is achieved. • It is supported by aviation-specific studies including: – A glare analysis study required by the Civil Aviation Safety Authority (CASA). – A radio frequency investigation by Airservices Australia.

B2	LIGHTING	
Ref	*Initiative*	*Planning parameters*
B2.1	*External lighting*	• External lighting restrictions will be in place due to air traffic control requirements. • Only LED yard lighting with motion sensors, to be used to reduce over lighting of external spaces after hours. • All lighting must achieve zero spill above the horizontal and not impact on track operations.
B2.2	*Internal lighting*	• Perimeter showroom lighting to remain on after hours, dimmable lights are encouraged. • LED light fittings to be used for energy efficiency.

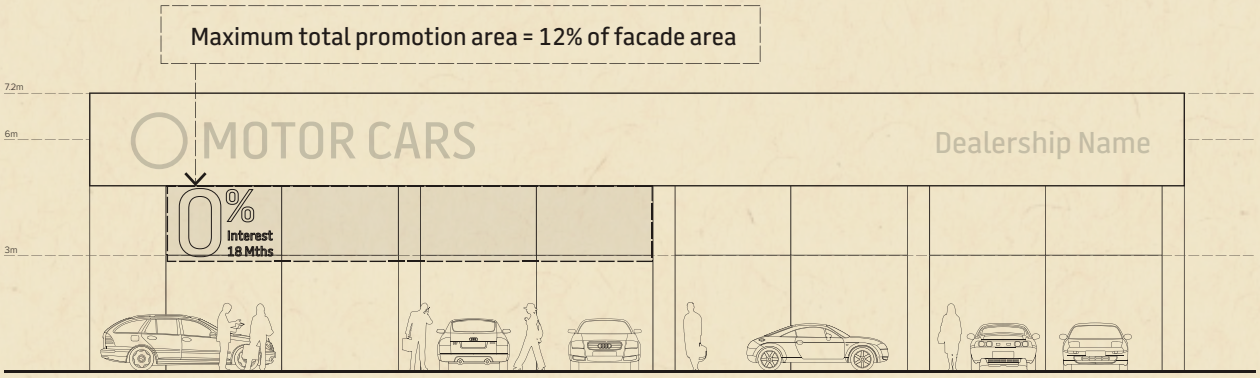
B3	FENCING	
Ref	*Initiative*	*Planning parameters*
B3.1	*Perimeter security*	For security or site delineation, bollards may be used where they comply with the following: • Fixed bollards are black (i.e. perimeter, preferably screened by/in landscaped areas). • Removable bollards are safety yellow (entrance/exit to the site only). • Stainless steel or galvanised only. • 140mm diameter (round). • 900mm high. • Weather resistant and low maintenance design is adopted. NB: Bollards are not mandatory. Bolt down bollards are not permitted, unless prior approval has been provided by BAC.
B3.2	*Fencing*	• Perimeter fencing is not permitted. • Fencing within development sites is not permitted.

B4	SERVICES AND INFRASTRUCTURE	
B4.1	*Energy efficiency*	• Provide a high level of energy efficiency in the building design.
B4.2	*Fire fighting capabilities*	• If buildings are a sufficient size to require fire sprinklers, on site storage tanks will be required.

B5.4 BRAND PROMOTION ON THE BUILDING



MAXIMUM BUILDING HEIGHT - TYPICAL APPLICATION



MINIMUM BUILDING HEIGHT - TYPICAL APPLICATION

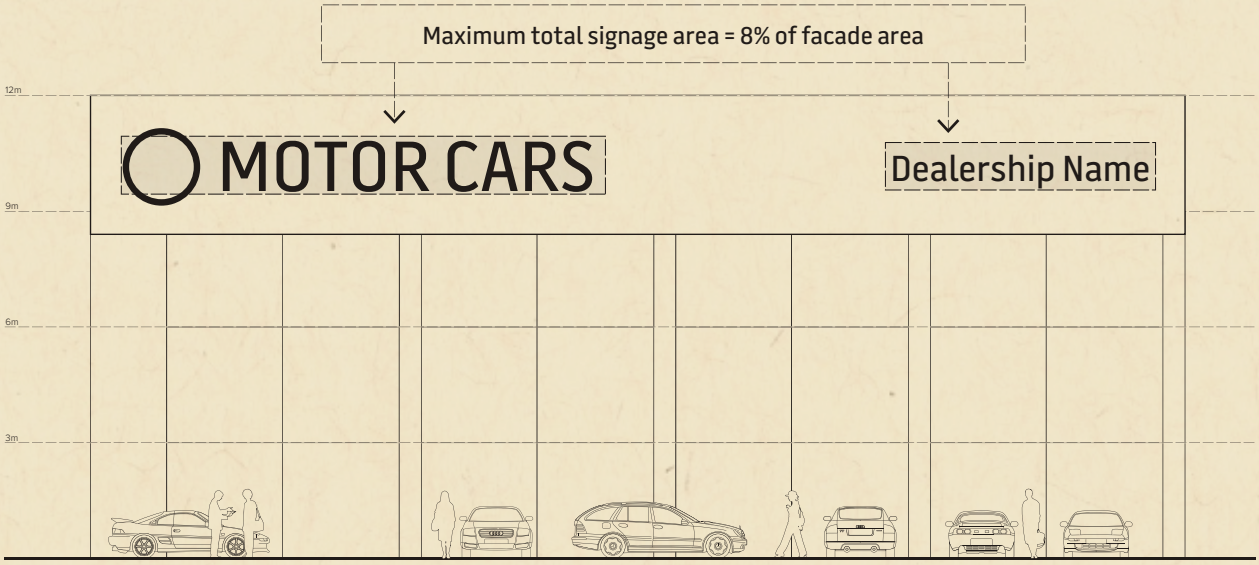
SIGNAGE AND WAYFINDING SUMMARY

All lots will have an internal road frontage and at least one other frontage. Each frontage can accommodate different sign types as follows:

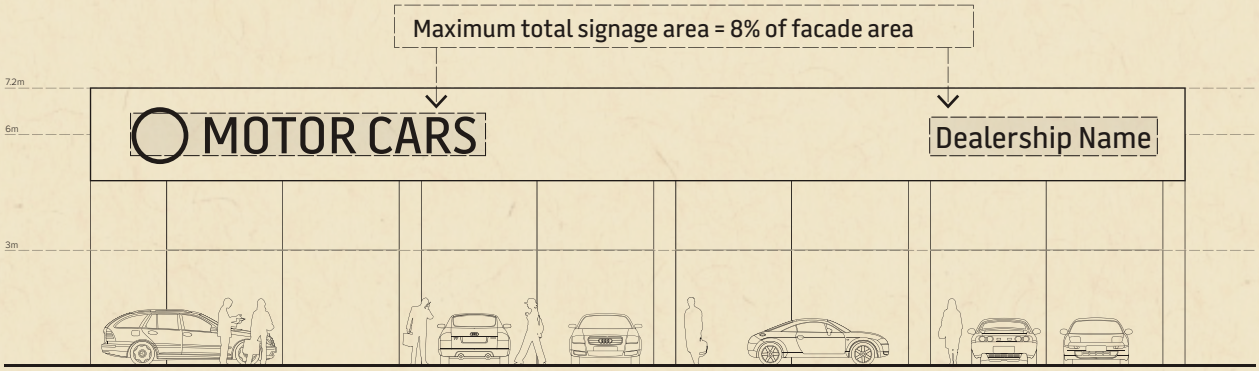
	Internal Road	Performance Track	External Major Road
Building identification signage	x	x	x
Street identification sign	x		
Promotion on the building	x		
Street banners	x		
Brand flags	x	x	x
Trackside hoarding		x	

Signage within lots used to direct vehicles and pedestrians, and identify different areas and services within the lot are not addressed in this section.

B5.2 BUILDING IDENTIFICATION SIGNAGE



MAXIMUM BUILDING HEIGHT - TYPICAL APPLICATION

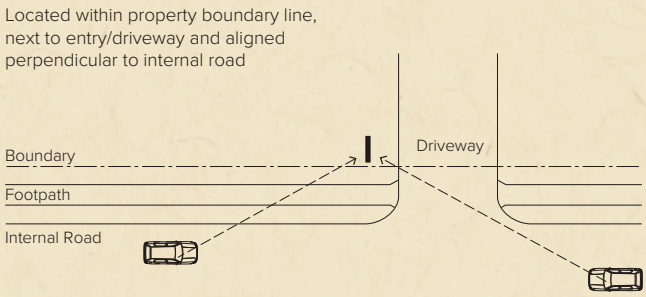


MINIMUM BUILDING HEIGHT - TYPICAL APPLICATION

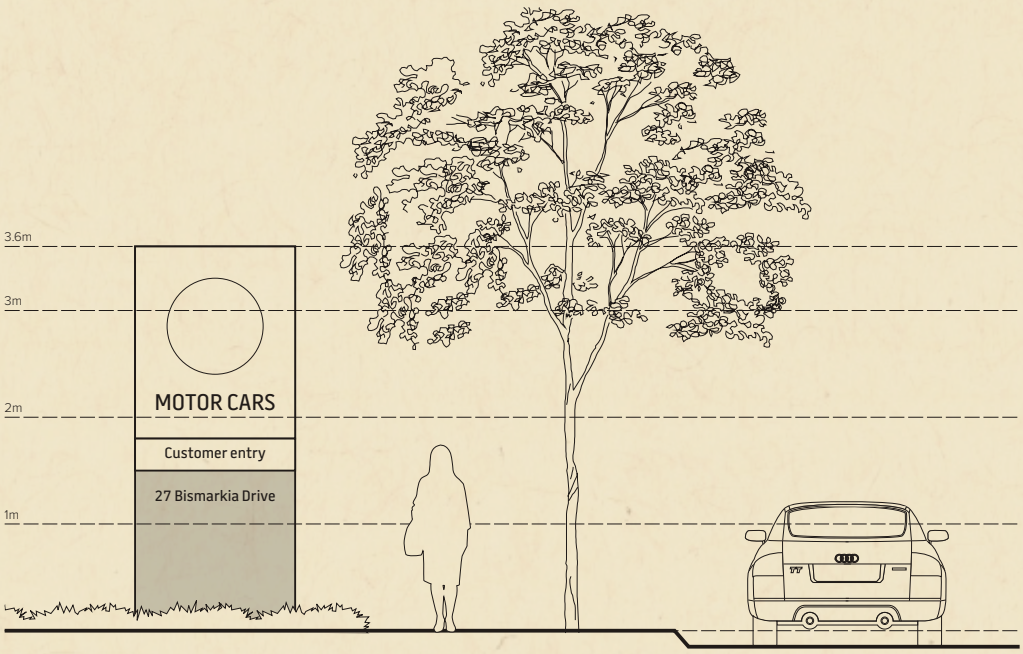
B5	SIGNAGE AND WAYFINDING	
Ref	*Initiative*	*Planning parameters*
B5.1	*Brand/ corporate identity*	• BNE acknowledges that brand corporate identity guidelines will form a major part of the dealership designs. Brand guidelines should be adhered to but still follow the site planning and building design guidelines provided by BAC.
B5.2	*Building identification signage*	• High level building signage used to identify the vehicle manufacturer brand as a minimum and dealership name if appropriate. • Applicable to the two most prominent building facades and may be applicable to a third building facade based on viewer site line angles into specific lots. • Signs are manufactured to conform with vehicle manufacturer brand design guidelines where applicable. • Where a vehicle manufacturer's brand design guidelines do not apply, the signage design must match a typical manufacturer's standard incorporating fabricated elements with internal illumination. • Signs should not extend beyond the building façade. • There may be up to two signs on a facade if different messaging is required eg. manufacturer brand and dealership name. • The total area of signage on a building facade must not be greater than 8% of the facade area, unless otherwise approved by BAC. • Illuminated signs must not adopt characteristics of those used at an aerodrome as outlined in the Civil Aviation Safety Authority Manual of Standards. Specifically the colours red, blue, green and yellow to be avoided.

B5	SIGNAGE AND WAYFINDING	
Ref	*Initiative*	*Planning parameters*
B5.3	*Street identification signage*	• Maximum one sign per lot. • Sign to be located on the internal road frontage only. • Sign to be two sided and positioned perpendicular to the traffic flow. • Sign to be used to identify the vehicle manufacturer brand and dealership name, street number and street name. • Sign size is 3600 mm high x 1500 mm wide x 200 mm deep. • Sign to be positioned inside the lot boundary line, within a landscape strip beside the customer vehicular entry point. • The position of the sign should not obscure driver sight lines entering and exiting the lot. • 'Customer entry' or similar appropriate street identification is to be located at driveway entrances. • The sign is composed of a concrete base supporting an illuminated identification sign that should be designed to follow the manufacture's brand design guidelines where applicable. • The concrete base is intended as a consistent element across the site which also aligns with other sign types around the whole airport precinct. • Detailed specifications of the sign construction and concrete base size, colour, aggregate and footings will be provided by BAC. • Signage to be complementary with BAC precinct signage.
B5.4	*Promotion on the building*	• Located on the internal road frontage only • This includes digital screens and static signage used to display current offers or marketing campaigns • It includes devices that may be mounted onto the building facade as well as devices that are mounted behind the glass line and visible from the internal road • Externally mounted devices should be integrated within the building facade • The total area of promotional devices on a building facade must not be greater than 12% of the facade area.

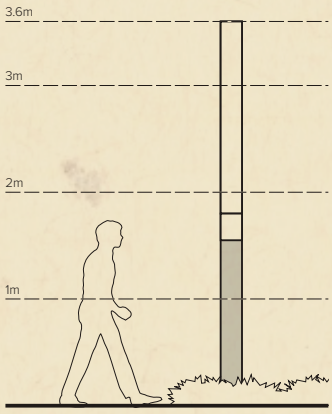
B5.3 STREET IDENTIFICATION SIGNAGE



TYPICAL LOCATION - TOP VIEW



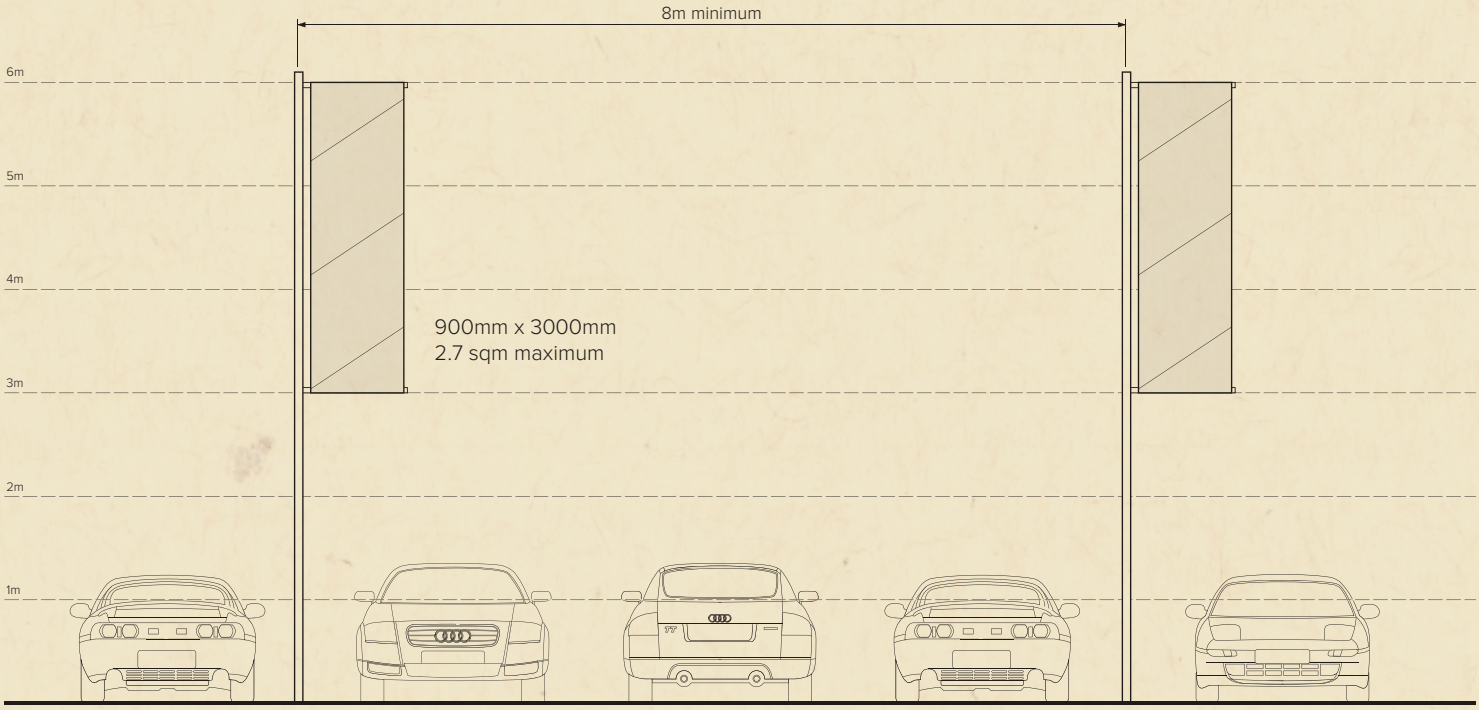
FRONT & BACK VIEW



SIDE VIEW

B5	SIGNAGE AND WAYFINDING	
Ref	*Initiative*	*Planning parameters*
B5.5	*Street banners*	• Located on the internal road frontage only. • Street banners are intended to further identify the manufacturer's brand or promote current offers or marketing campaigns. • The banner is of a non-rigid material that is fixed at the top and bottom to brackets extending from a freestanding pole or lighting standard. • The banners are positioned inside the boundary line spaced at least 8 metres apart. • The top of the banner is not to exceed 6 metres above the ground. • The area of the banner is not to exceed 2.7 square metres.
B5.6	*Brand flags*	• Can be located on all frontages. • Branded flags are intended to convey a celebratory atmosphere. • Flags are a light weight fabric, may be any shape and are not supported by horizontal brackets. • They may be placed in clusters or along the boundary line spaced at least four metres apart. • The top of the flag is not to exceed six metres above the ground. • The area of the flag is not to exceed two square metres.

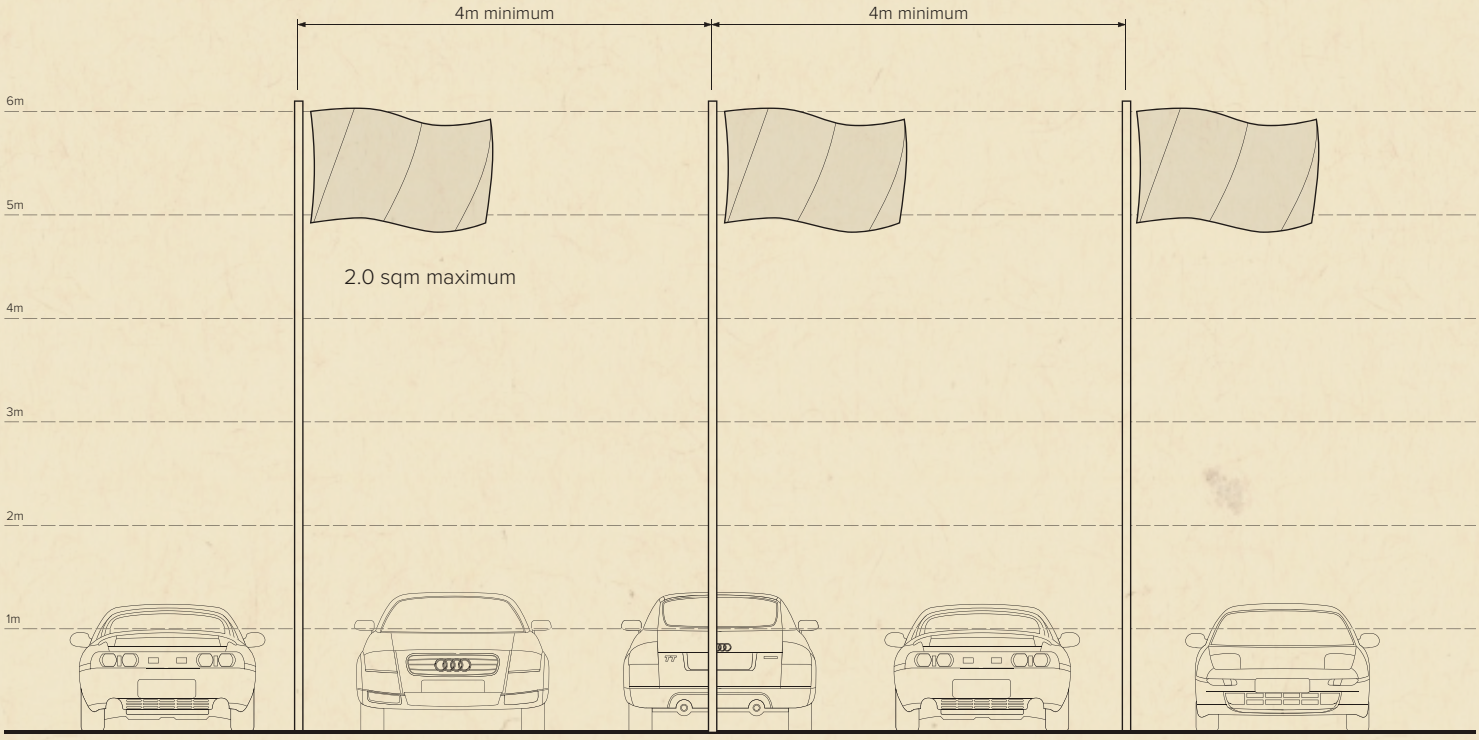
B5.5 STREETBANNERS



TYPICAL SETOUT

B5	SIGNAGE AND WAYFINDING	
Ref	*Initiative*	*Planning parameters*
B5.7	*Brand pylon signs*	• Maximum one sign per brand accommodated within the lot. • Sign to be located on the internal road frontage only. • Sign height should not extend past the height of the adjacent buildings on the lot or be a maximum height of nine metres (whichever is less). • The position of the sign should not obscure driver sight lines entering and exiting the lot. • All signage is to be complementary to BAC precinct signage.

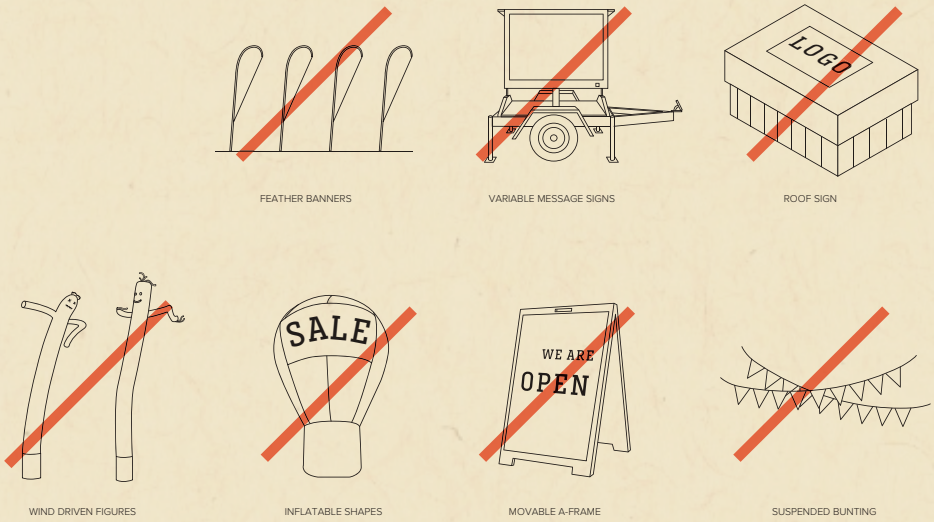
B5.6 BRAND FLAGS



B5	SIGNAGE AND WAYFINDING	
Ref	*Initiative*	*Planning parameters*
B5.8	*Exclusons*	Devices that are designed to grab attention are not considered appropriate for this site. These include the following: • Roof top sign. • Inflatable or wind driven figures or shapes. • Feather banners mounted on the ground or garden beds. • Movable A-frame signs. • Variable message signs. • Suspended bunting. • Outdoor audio broadcasting.

B6	ACCESS AND MOVEMENT	
Ref	*Initiative*	*Planning parameters*
B6.1	*Pedstrian movement*	Development provides for equitable, efficient and safe movement of persons, including persons with a disability, and contributes to pedestrian friendly streets and accessible places where people can meet. Pedestrian site access and internal pathways should: • Connect to public pedestrian areas where appropriate. • Be safe and well lit. • Be clearly defined and visible. • Provide clear sight lines and surveillance of surroundings. • Be separated from car parking and vehicle manoeuvring areas. • Provide direct access to buildings from areas likely to be used at night. • Not be obstructed by solid walls, fencing or landscaping. • Comply with relevant legislative requirements to ensure usability by a person with a disability.

B5.7 EXCLUSIONS



Exclusions

PART 03 - GETTING STARTED

KEY DEVELOPMENT RESOURCES

Established Strategies and Legislative Requirements

Details of the legislative requirements for the airport and its corporate and business objectives are presented in an extensive suite of guiding documents and specifications.

These documents clearly illustrate the diversity of airport considerations and priorities, as well as its business ambition and future development objectives.

The documents provide a means for the airport to coordinate its diversity, and set in place strategies to align priorities, day to day action and decision making.

Statutory Framework for Development

Brisbane Airport Corporation (BAC) is the Airport Lessee Company which holds the long-term lease over Brisbane Airport from the Commonwealth Government. As a result, all building and development activities at Brisbane Airport are regulated by Commonwealth legislation consisting of, but not limited to:

- The Airports Act 1996.
- The Airports (Building Control) Regulations 1996.
- The Airports (Environment Protection) Regulations 1997.
- The Aviation Transport Security Act 2004 and associated regulations.
- Airports (Protection of Airspace) Regulations 1996.

In accordance with the statutory requirements, the BAC must ensure that any development on airport land is consistent with:

- The approved Master Plan for the airport.
- An approved Major Development Plan for the airport (Airports Act 1996, section 89), if applicable.
- The final Airport Environment Strategy.
- The Airport Lessee Company's planning objectives.

Balancing Environmental Sustainability and Airport Operations

BAC is committed to an active response to the long-term impacts of climate change and minimising adverse environmental impacts of aviation and property development activities. The organisation's sustainability goals are to maximise energy, water and waste efficiencies, manage noise impacts, balance the built environment and biodiversity values and achieve best practice in urban and built design.

The airport has three environmental priorities:

- Achieve a balance between the on-airport built environment and biodiversity values.
- To be recognised as a leader in the management of energy, water, waste, noise and biodiversity.
- Achieve environmentally sustainable development across the airport.

Other Key References

In support of the requirements of this legislative and statutory framework BAC has produced a complementary suite of guidance documents. These documents are intended to provide an additional development resource, providing further direction and detail parameters to guide and align development outcomes to its strategic ambition.

The Landscape Setting Strategy
The Landscape Setting Strategy is the primary reference for all landscape initiatives at the airport.

It sets in place a clear overarching 'Statement of Intent', defining the guiding ambition for the landscape of Brisbane Airport. It provides a reference to guide day to day decision making, project development and evaluation to ensure all opportunities and investment are aligned to realise BAC's vision for the development of its landscape asset, to deliver enhanced habitat diversity, best practice environmental quality and memorable landscape experiences.

Brisbane Airport Planning Guideline 2017
The Brisbane Airport Planning Guideline 2017 is the primary reference for planning initiatives that relate to the built environment. It has been developed to support and advance the development direction set by the Brisbane Airport Master Plan.

It provides instruction in relation to operational compatibility, the desired character and amenity of precincts, integration with existing and future infrastructure, and minimum planning requirements. The document provides performance-based planning objectives, intended to be flexible and adaptable to allow optimal site-specific solutions. Compliance with the minimum planning requirements is achieved by satisfying the performance-based objectives outlined in this document.

Other technical guidelines
The Brisbane Airport Technical Guidelines provide additional, detailed information to assist designers, contractors and other specialists involved in preparing design and contract documentation for works on the Brisbane Airport. Specifically the guidelines address the particular conditions the airport environment necessitates, outlining distinct design and construction issues that are unique to the airport.

Precinct-specific advice

The BNE Auto Mall Development Plan has been produced to support and advance the directions set by the legislative, regulatory and guidance documentation detailed above, to provide precinct-specific advice.

The intent of the requirements is to uphold the distinctiveness, quality and amenity of the precinct as it develops over time.

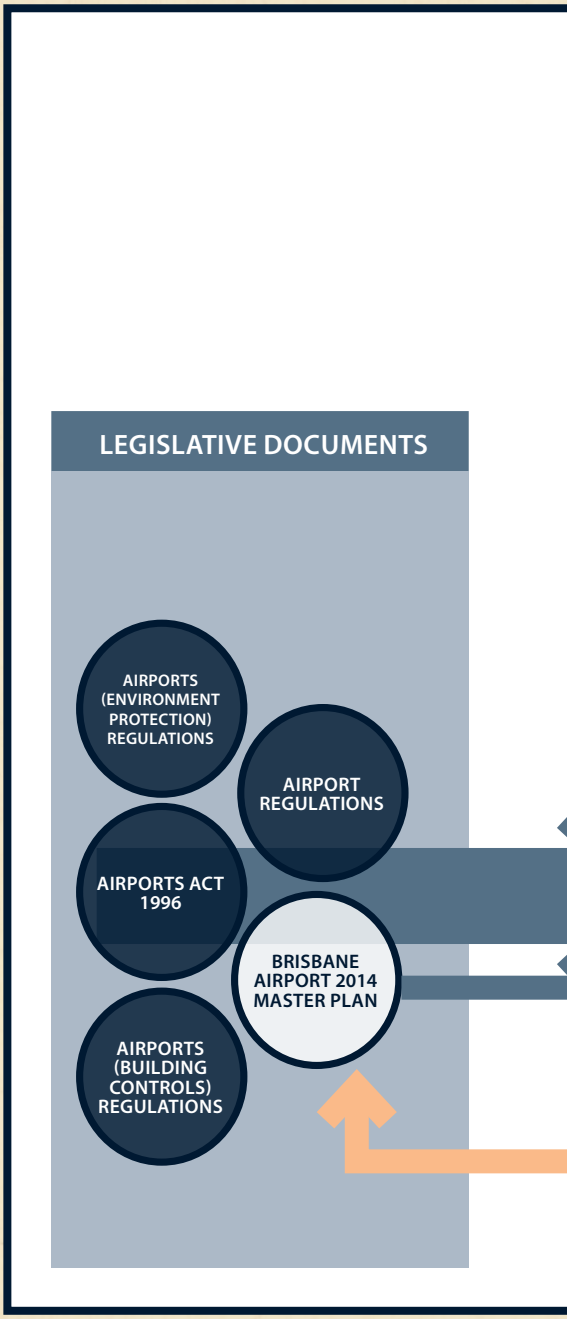
It provides the primary reference for development of BNE Auto Mall.

Where the BNE Auto Mall Development Plan does not respond to aspects of a development, the requirements outlined in the Landscape Setting Strategy and BAC Planning Guideline prevail.

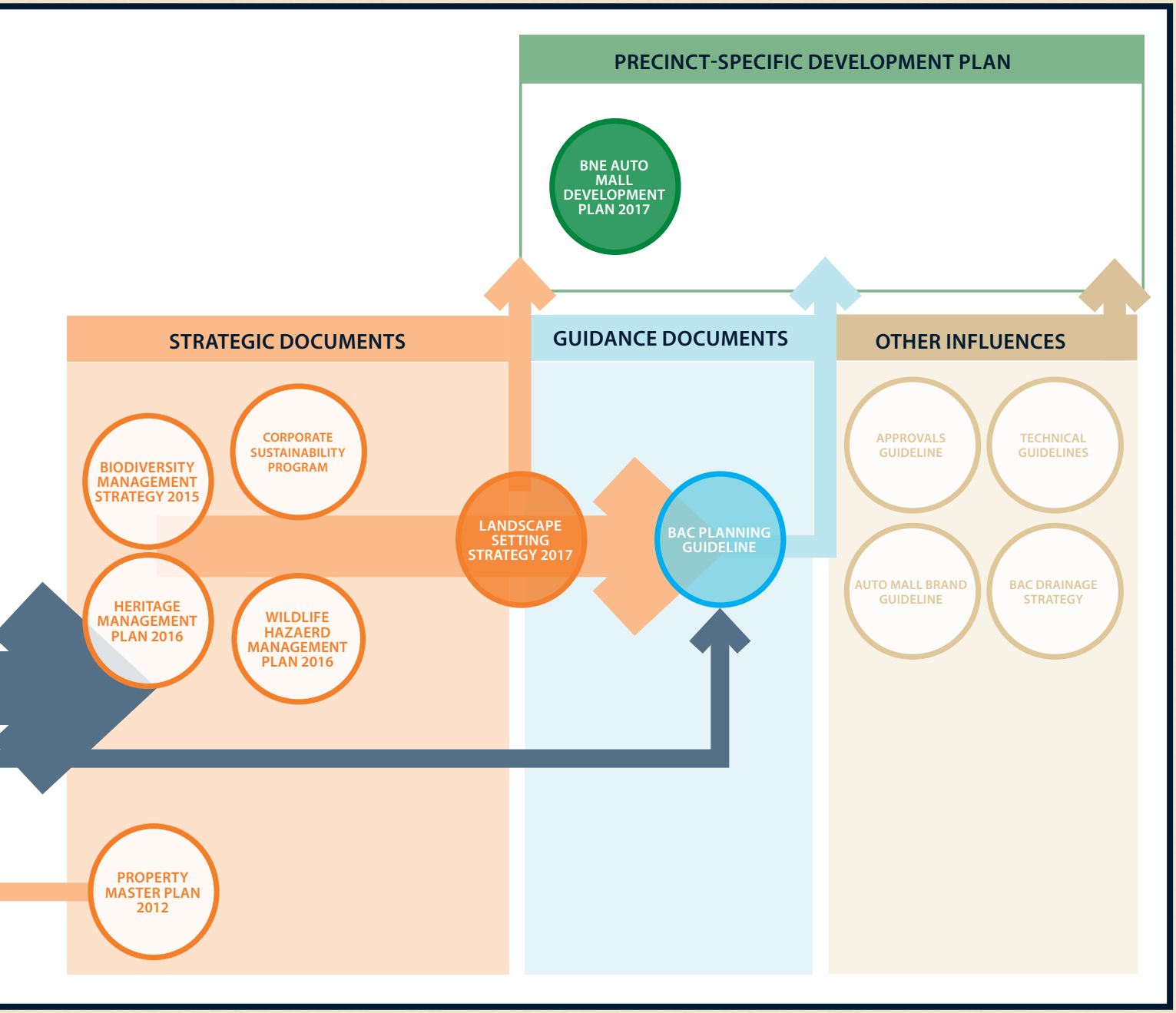
The BAC planning framework

The diagram opposite illustrates the relationship between the key documents of relevance to the design, development and management of the airport precincts.

The BNE Auto Mall Development Plan draws from these documents to embed established relevant principles and practices within the context of a strategic approach to development across the precinct.



THE BAC PLANNING FRAMEWORK



ASSESSMENT AND APPROVAL PROCESS

The Airport Approvals Guideline outlines the airport development approvals process for new development within the airport.

It explains the roles and responsibilities of all parties involved in the process from concept to completion. The adjacent table (from this document) provides a useful quick reference resource for developers, illustrating the recommended process of engagement and approvals at the airport.

The Airport Approvals Guideline is available via Brisbane Airport Corporation's website - www.bne.com.au.

ENGAGE EARLY

A key strategy for development success is to engage early.

Early consultation with relevant BAC team members will ensure that development opportunities:

- Can be shaped to achieve the required development parameters.
- Target investment to deliver development success.
- Contribute to the delivery of the development vision and advance the six development values.

Recommended approval process

First Contact with Client

- Toolkit provided including fact sheet.

Heads of Agreement

- Confirm urban planning.
- Provide approvals guideline.

Final Lease

- Design intent and expectations to be articulated in the lease.
- Final design documentation to be prepared.

Formal Approval Process

- Design review meeting.
- Approvals checklist.
- Articulate security requirements.
- Confirm consistency with the Master Plan.
- Confirm consistency with the AES.
- Consider MDP triggers.
- Confirm consistency with BAC Planning Objectives.
- Assess infrastructure impacts.
- Articulate environmental requirements.
- Articulate environmental requirements.
- Issue BAC consent.
- Assessment against the BNE Auto Mall Development Plan.

Building Work Approval

- Assist client with building approval process with Airport Building Controller (ABC).

Construction

- Issue work approval.
- Liaise with client/contractor.
- Regular inspections.

Final Inspections

- ABC/ BAC to undertake final inspection.

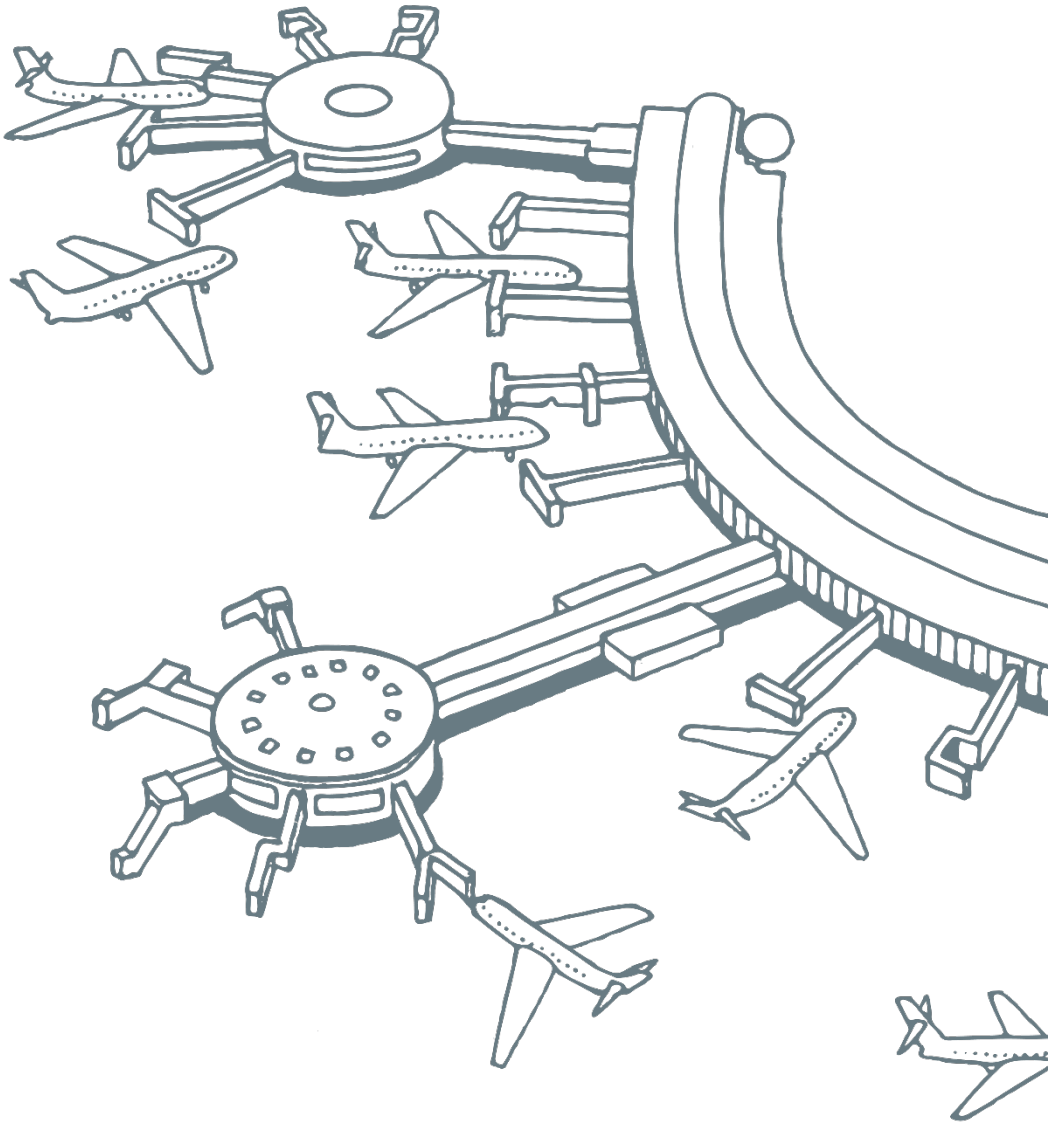
Certificate of Compliance

- ABC to issue the Certificate of Compliance to allow occupation/ use of the project.

Source: Airport Approvals Guideline, Version 4 2017 - Page 8

BRISBANE
AIRPORT
AUSTRALIA

APPENDIX D
ENVIRONMENTAL ASSESSMENT REPORT (AS ENDORSED BY DIRD)



Proposed Brisbane Airport Auto Mall

Environmental Assessment Report

Brisbane Airport Corporation

255492

17 August 2017

aurecon

Bringing ideas to life

Document control record

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1	31 May 2017	Updated with BAC comments	GK	CR	CR	CR
2	14 July 2017	Final	GK	CR	CR	CR
3	11 August 2017	Updated with AEO comments	GK	CR	CR	CR
4	17 August 2017	Updated with AEO comments	GK	CR	CR	CR
		4				

Approval			
Author signature		Approver signature	
Name	Georgina Kerr	Name	Corey Roderick
Title	Environmental Scientist	Title	Technical Director

Executive summary

Purpose

Aurecon Australasia Pty Ltd has been commissioned by Brisbane Airport Corporation (BAC) to prepare an Environmental Assessment Report for the land development of the proposed Brisbane Airport Auto Mall (the Project).

The objective of this Environmental Assessment Report is to identify potential environmental issues and impacts associated with the Project and recommend appropriate mitigation measures to ensure identified impacts are minimised and managed through the design and construction of the Project.

This Environmental Assessment Report also demonstrates that the Project can proceed in accordance with the relevant guidelines and legislation and ensure there is no significant impact on environment and heritage matters.

Key findings

An assessment of potential environmental impacts from the Project has been conducted, including consideration of contaminated soils and groundwater, acid sulfate soils, ecology, hydrology, water quality, air quality, noise and vibration, cultural heritage and traffic and aviation safety matters. Mitigation measures have been developed to ensure these identified impacts are minimised and managed.

The presence of potentially contaminated and acid sulfate soils within the Project site is a key environmental consideration for the Project and will need to be managed during Project works, including the implementation of an Erosion and Sediment Control Plan and Acid Sulfate Soil Management Plan, as well as groundwater monitoring during fill placement and surcharging activities.

This environmental assessment has also found that dust generation from construction earthworks has the potential to impact on the Kingsford Smith Memorial and other nearby sensitive receptors. Appropriate dust suppression techniques will be employed to ensure impacts from dust generation are minimised. In addition, baseline and construction dust deposition monitoring at five nominated locations will be conducted throughout Project works.

Background noise and vibration monitoring will be required to provide a benchmark to assess construction noise and vibration associated with the Project. Mitigation measures to reduce noise and vibration impacts, particularly at the nearby Kingsford Smith Memorial, have been recommended to ensure construction activities do not have a detrimental impact on the Memorial. In addition, further mitigation will be achieved through implementation of management measures such as a building assessment on the Kingsford Smith Memorial and the Stop Work Procedure for unexpected cultural heritage finds.

This Environmental Assessment Report concludes that the Project will have minimal impact on the environment and heritage matters if the recommended mitigation and management measures are implemented.

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Acronyms

Acronyms	Definition
AADT	Average Annual Daily Traffic
AASS	Actual acid sulfate soil
ABC	Airport Building Controller
ACH Act	*Aboriginal Cultural Heritage Act 2003*
ACM	Asbestos containing material
AD	Aerodrome Datum
AEO	Airport Environment Officer
AEPR	*Airports (Environment Protection) Regulations 1997*
AES	Airport Environment Strategy
AHD	Australian Height Datum
Air NEPM	National Environment Protection (Ambient Air Quality) Measure
Air Toxics NEPM	National Environment Protection (Air Toxics) Measure
Airports Act	*Airports Act 1996*
ASRIS	Australian Soils Resource Information System
ASS	Acid sulfate soils
BAC	Brisbane Airport Corporation Pty Ltd
BCC	Brisbane City Council
BoM	Bureau of Meteorology
CASA	Civil Aviation Safety Authority
CEMP	Construction Environmental Management Plan
CLR	Contaminated Land Register
CPA	Central Parking Area
CPESC	Certified Professional in Erosion and Sediment Control
CRC Care	Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSR	Contaminated Sites Register
DAF	Department of Agriculture and Fisheries
DCD	Development Control Document
DERM	Department of Environment and Resource Management
DIRD	Department of Infrastructure and Regional Development
DO	Dissolved oxygen
DoEE	Department of the Environment and Energy
EAR	Environmental Assessment Report
EHP	Department of Environment and Heritage Protection
EIL	Environmental investigation level
EIS	Environmental Impact Statement
EMP	Environmental Management Plan

Acronyms	Definition
EMR	Environmental Management Register
EMS	Environmental Management System
EP Act	*Environmental Protection Act 1994*
EP Reg	*Environmental Protection Regulation 2008*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPP	Environmental protection policies
EPP (Air)	Environmental Protection (Air) Policy 2008
EPP (Noise)	Environmental Protection (Noise) Policy 2008
EPP (Water)	Environmental Protection (Water) Policy 2009
ERA	Environmentally relevant activities
ESA	Environmentally significant area
ESCP	Erosion and Sediment Control Plan
EV	Environmental values
Fisheries Act	*Fisheries Act 1994*
GEM	Guideline for Environmental Management (GEM-002)
GIL	Groundwater investigation level
HBGV	Health based guidance value
HSL	Health screening level
IECA	International Erosion Control Association
ISL	Interim screening level
Landside SQMS	Landside Stormwater Quality Management Strategy
MDP	Major development plan
MPN	Most probable number
MSES	Matter of State Environmental Significance
NATA	National Association of Testing Authorities
NC Act	*Nature Conservation Act 1992*
NC Reg	*Nature Conservation Regulation 2006*
NEPM 2013	National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amendment 1, 2013)
NES	National Environmental Significance
NIAP	Noise Impact Assessment Policy
NPEC	National Environment Protection Council
NPEC Act	*National Environment Protection Council Act 1994*
OLS	Obstacle limitation surface
PANS-OPS	Procedures for Air Navigation Services Aircraft Operations
PASS	Potential acid sulfate soil
PFAS	Per- and poly- fluoroalkyl substances
PFHxS	Perfluorohexanesulfonic acid
PFOS	Perfluorooctanesulfonic acid
QH Act	*Queensland Heritage Act 1992*
RE	Regional Ecosystem
RMS	Roads and Maritime Services

Acronyms	Definition
RPEQ	Registered Professional Engineer of Queensland
RTA	Roads Traffic Authority
SPP	State Planning Policy
TN	Total nitrogen
TP	Total phosphate
TSP	Total suspended particulates
TSS	Total suspended solids
UCL	Upper Confidence Limit
VM Act	*Vegetation Management Act 1999*
Water Act	*Water Act 2000*
WHS Act	*Work Health and Safety Act 2011*
WoNS	Weeds of National Significance
WQO	Water quality objective
WSUD	Water Sensitive Urban Design

1 Introduction

1.1 Background

Aurecon Australasia Pty Ltd has been commissioned by Brisbane Airport Corporation Pty Ltd (BAC) to prepare an Environmental Assessment Report (EAR) for the land development of the proposed Brisbane Airport Auto Mall (the Project).

The proposed Project will involve the development of a multi-purpose automotive business precinct situated around a central 2.5 km test track. The proposed Auto Mall will include flagship dealerships, exhibition and conference activities, hotels, event areas, driver training schools and regional offices, designed around a multi-purpose test track. The Project construction has been divided into two distinct phases; Phase 1 includes the land clearing, ground improvement and bulk earthworks associated with developing the land, while Phase 2 includes site preparation and future infrastructure works.

The Project site is a 55.7 ha parcel of undeveloped low lying bushland and small mangrove communities enclosed by Moreton Drive, Airport Drive and Nancy Bird Way and located in close proximity to the Brisbane International Terminal (Airport Central Precinct) (refer Figure 1.1).

This report provides the findings of Aurecon's assessment of the baseline environmental conditions within the Project site and discusses mitigation measures to avoid any significant environmental impacts from the land development phase of the Project.

1.2 Objectives

The objectives of this EAR include:

- Review information from previous studies in the area
- Identify potential environmental issues and impacts associated with the Project
- Develop appropriate mitigation measures to be implemented during design and construction of the Project to ensure identified impacts are minimised and managed
- Demonstrate that the Project can proceed in accordance with the relevant guidelines and legislation to ensure no significant impact is caused

1.3 Report structure

The structure of this EAR is shown in Table 1.1.

Table 1.1 Report structure

Section number	Aspects addressed in this EAR	Overview of section
1	Introduction	▪ A general overview of the Project background context ▪ Details on the report structure ▪ Objectives of the EAR ▪ Details of the Project proponent

Section number	Aspects addressed in this EAR	Overview of section
2	Project description	■ Project justification and objectives ■ Design and scope of works ■ Development phases
3	Legislative requirements	■ Consistency with Commonwealth legislation ■ Consistency with Airport policies and planning documents ■ Consistency with State and Local Government legislation and planning documents
4	Land use	■ A review of the existing land uses surrounding the Project site ■ Identification of potential impacts and mitigation measures
5	Geology, soils, topography and contaminated land	■ An assessment of the existing geological, soils and topographic characteristics within and surrounding the Project site ■ An assessment of contaminated land based on Golders (2016a; b) investigations ■ An assessment of acid sulfate soils based on Golders (2016c; d) investigations ■ Identification of potential impacts and mitigation measures
6	Flora and fauna	■ Assessment methodology including scope, documents reviewed and investigations undertaken ■ Assessment of the existing ecological values within and directly adjacent to the Project ■ Identification of potential impacts and mitigation measures
7	Hydrology and water quality	■ An assessment of water quality within and adjacent to the Project site ■ Consideration of the water quality objectives and limits for watercourses downstream of the Project site to determine appropriate discharge limits for the Project during construction ■ Identification of potential impacts and mitigation measures
8	Air quality, odour and dust management	■ A desktop assessment of the existing air quality and climatic conditions within and surrounding the Project site. ■ Air quality criteria have been assessed to determine the most appropriate criteria to be applied to the Project during construction ■ Identification of potential impacts and mitigation measures
9	Noise and vibration	■ An assessment of the existing noise environment within and surrounding the Project site ■ Noise and vibration criteria have been assessed to determine the most appropriate criteria to be applied to the Project during construction ■ Identification of potential impacts and mitigation measures
10	Social and economic issues	■ An assessment of the social environment issues within the Project site ■ Identification of potential stakeholders within/surrounding the Project site ■ Identification of potential impacts and mitigation measures
11	Cultural heritage	■ An assessment of the cultural heritage values within the vicinity of the Project ■ Identification of potential impacts and mitigation measures
12	Waste and hazardous goods management	■ A desktop investigation of the possible types of waste generated during the construction phase of the Project ■ Identification of potential impacts and mitigation measures

Section number	Aspects addressed in this EAR	Overview of section
13	Traffic and aviation safety	■ An assessment of the potential impacts to aviation safety as a result of the construction of the Project ■ Identification of potential construction traffic impacts and mitigation measures
14	Landscape and visual amenity	■ An assessment of the existing landscape and visual amenity within and adjacent to the Project ■ Identification of potential impacts and mitigation measures
15	Conclusions and recommendations	■ A summary of the key findings of the environmental assessment that will need to be considered throughout the design and construction of the Project
-	References	■ A list of reference material used during the preparation of this EAR
-	Appendices	■ The appendices include technical information and reports that support the discussion provided within the body of the EAR

1.4 Project proponent

All works associated with the Project are on land within the existing boundary of Brisbane Airport. BAC is an “airport-lessee company” under the *Airports Act 1996*.

The proponent for this proposed Project is:

Brisbane Airport Corporation Limited
11 The Circuit
Number 1 Airport Drive
Brisbane Airport QLD 4008

The contact in connection with this proposal is Peter Boyle, Civil Project Manager – Airport Construction Assets Group, BAC, telephone (07) 3406 3215.

2 Project description

2.1 Project justification and objectives

This EAR provides an assessment of the potential environmental impacts that may occur as a result of design and construction of the land development phase of the Project, including land clearing, ground improvement works and bulk earthworks.

Project construction has been divided into two distinct phases. Phase 1 includes the land clearing, ground improvement and bulk earthworks associated with developing the land while Phase 2 includes site preparation and future infrastructure works.

2.2 Project development phases

Phases 1 and 2 are envisaged to be delivered in three stages to provide BAC with suitably prepared land from 2021, as detailed in Table 2.1. The timing of the delivery of these stages is preliminary only and based on the program provided in Appendix A. These timings may be subject to change depending on the final earthworks and surcharging solution. The indicative staging configuration is illustrated in Figure 2.1.

Table 2.1 Development timing

Stage	Area (ha)	Planned start date	Bulk earthworks complete and surcharge removed
1	33.6	Quarter 3 2017	Quarter 3 2020
2	6.9 + 2.23 (flood storage)	Quarter 4 2018	Quarter 4 2020
3	12.0 + 1.01 (flood storage)	Quarter 1 2021	Quarter 4 2022

2.3 Location of proposed development

The site is a 55.7 ha parcel of undeveloped low lying bushland and small mangrove communities enclosed by Moreton Drive, Airport Drive and Nancy Bird Way and located in close proximity to the Brisbane International Terminal (Airport Central Precinct). The Project will also involve modification to several existing drainage structures under the surrounding roadways, including Moreton Drive, Airport Drive and Nancy Bird Way. In particular, the Banksia drainage backflow into the site will be bunded to prevent tidal water access. The bund will be fitted with a pipe and valve to allow release of any build-up of water from inside the Project site.

The Project site is moderately disturbed and predominately contains casuarina plantations with some mangrove communities and grasslands. The Project site is traversed by two main drainages lines that connect to Landers Pocket Drain, including two that flow from Banksia Place, under Nancy Bird Way and another that flows across the Project site from Moreton Drive. There are a number of existing fire trails and tracks that run through the Project site, which will be removed during Project works. Access to the Project site is currently via a number of security gates along Airport Drive as well as unsecured access from Nancy Bird Way. There is no site access from Moreton Drive.

Figure 1.1 shows the location the Brisbane Airport Auto Mall and surrounding area.

2.4 Proposed design/scope of works

The Project site is located in a vacant low lying area within the Airport Central (Airport Drive West) sub-precinct of the Brisbane Airport. Based on the Engineering Concept Design (Opus 2016), the approximate excavation and fill volumes (excluding requirements for surcharge) include:

- Excavation: 67,000 m^3 and 34,800 m^3 (flood storage basins)
- Fill: 380,000 m^3
- Drainage layer: 8,400 m^3 (wick drains)

The Project may undertake a 24 hour earthwork operations as well as material processing, including sorting, crushing, processing and stockpiling. Site access may be obtained from Airport Drive (for Stages 1, 2 and 3), initially with a left in/left out arrangement, and also from Nancy Bird Way (for Stages 1 and 3). Access from Moreton Drive (left turn only) may also be required as an option. Site access arrangements will be confirmed during detailed design.

The following activities are required to prepare the site for the future Auto Mall:

- Site clearing and partial grubbing
- Bulk earthworks, including but not limited to:
  - Supply and place drainage layer
  - Supply and place settlement plates
  - Supply, place and compact imported fill material
  - Processing of material, including earth and rock, for use as fill material, including sorting, crushing and stockpiling
  - Undertake appropriate erosion and sediment control measures
  - Construct temporary drainage works and detention basins as required
  - Construct geogrid and slope stability measures
- Surcharge, including:
  - Supply, place and compact imported material (approximately 336,000 m^3) suitable for use as surcharge fill on future stages as surcharge:
    - Roads and building areas: from 3.75 m Aerodrome Datum (AD) to 7.0 m AD
    - Track area: from 3.75 m AD to 6.0 m AD
  - Supply and install wick drains to parts of the Project site to speed up the consolidation process
  - Construct geogrid and slope stability measures
- Drainage works, including:
  - Existing drainage systems are intended to be retained for Stage 1 (refer Figure 1.1). In Stages 2 and 3, the majority of flows will be captured by a proposed drainage channel, which will be constructed around the perimeter of the Project site
  - Installation of bunds to prevent tidal water access from Banksia precinct. The bund will be fitted with a pipe and valve to allow release of any build-up of water from inside the Project site
  - The perimeter drain will act as a sediment control mechanism to enable runoff from earthworks to be captured and treated before being discharged off site
  - Progressive installation of storage basins/channels with a capacity of approximately 44,200 m^3 for flood storage during storm events
  - Future installation of flap/tidal gates major culverts under Moreton Drive and Nancy Bird Way to prevent back flow from the regional or storm tide flood events which would impact on the Project site's flood immunity, as part of the Phase 2 works. Installation of temporary earthen bunds and pipes with shut off valves will be installed to prevent tidal water ingress to the Project site, as part of Phase 1 works

- Acid sulfate soil (ASS) treatment, including:
  - Staged construction of a lime cut-off trench along the western, southern and eastern boundaries of the Project site prior to commencement of filling/surcharging, within 50 m of the end of the installed trench until fully completed (northern boundary already contains suitable buffering capacity)
  - Placement of a 10 m wide strip of surface lime ‘guard layer’ under the perimeter of each surcharge area prior to placement of the drainage blanket where wick drains are installed, to neutralise any seepage resulting from wick drains
  - Excavated ASS materials to be managed by stockpiling within a nominated section of the fill/surcharge platform and neutralising by lime treatment
  - Progressive construction of the perimeter drain in staged sections to monitor and treat groundwater discharges
  - Incorporation of lime into the walls and base of the perimeter drain to neutralise discharges to groundwater (higher lime application rates are required along the western site boundary to buffer acidic groundwater)
  - Isolation of drains from external discharge

3 Legislative context

3.1 Legislative requirements

The Project is located on Commonwealth owned Airport land and is governed by Commonwealth legislation, primarily the *Airports Act 1996* and the *Airports (Environment Protection) Regulations 1997*. Only Commonwealth legislation applies. However, if the Commonwealth legislation is silent about an aspect of the development, BAC representatives and/or the Airport Environment Officer (AEO) may choose to observe the requirements of State legislation.

3.2 Consistency with Commonwealth Legislation

Commonwealth legislation applicable to this Project includes:

- *Airports Act 1996* (Airports Act)
- *Airports (Environment Protection) Regulations 1997* (AEPR)
- *Airports (Protection of Airspace) Regulation 1996*
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *National Environment Protection Council Act 1994*

The relevance of each legislative instrument is assessed below.

3.2.1 Airports Act 1996

3.2.1.1 Background

The Airports Act regulates all Commonwealth owned airports within Australia. The Act specifies that there must be an Airport Master Plan and an Airport Environmental Strategy for all privately leased Commonwealth owned airports within Australia. The Airports Act and associated regulations set out an Australian Government regime for land use planning and the regulation of building activities at airports. In particular:

- Section 70(2) states that a final master plan for an airport is to:
  - *a) Establish the strategic direction for efficient and economic development at the airport over the planning period of the plan*
  - *b) Provide for the development of additional uses of the airport site*
  - *c) Indicate to the public the intended uses of the airport site*
  - *d) Reduce potential conflicts between uses of the airport site, and to ensure that uses of the airport site are compatible with the areas surrounding the airport*
  - *e) Ensure that all operations at the airport are undertaken in accordance with relevant environmental legislation and standards*
  - *f) Establish a framework for assessing compliance at the airport with relevant environmental legislation and standards*

g) *Promote the continual improvement of environmental management at the airport*

- The Airports Act requires a 'major development plan (MDP)' for each major development at a regulated airport. Section 89 of the Airports Act prescribes those activities that are included as a 'major airport development'
- Section 112 specifically excludes State laws from applying in relation to land use planning and the regulation of building activities at airports
- Section 132 of the Airports Act provides that the regulations (eg the AEPR) may make standards and impose requirements that are to be complied with in relation to, or in relation to the prevention or minimisation of:

  a) *Environmental pollution (including air, water or soil pollution) generated at airport sites; or*

  b) *Impacts on biota or habitat; or*

  c) *Interference with sites of heritage value; or*

  d) *Interference with sites of significance to Aboriginal or Torres Strait Islander people; or*

  e) *The emission of noise generated at airport sites (other than noise generated by aircraft in flight); or*

  f) *The disposal or storage of waste at airport sites.*

- The Airports Act also provides for the monitoring, and remedying breaches of, environmental standards at airports
- Section 182 provides for the protection of airspace around airports and states that activities that result in intrusions into prescribed airspace are called 'controlled activities', which require approval

3.2.1.2 Relevance to the Project

Section 70(2) – Master planning

BAC prepares a Master Plan every five years in accordance with the requirements of the Airports Act. The applicability of the BAC Master Plan to the Project is discussed in Section 3.3.2 below, while the Project's compliance with the Airport Environment Strategy (BAC 2014a) is discussed in Section 3.3.4.

Section 89 – Need for an MDP

In reviewing the definitions contained in Section 89 of the Airports Act, it is considered that an MDP is not required for the Project. The bulk earthworks component of the Project is not considered to be building works as it relates to clearing, filling, surcharging and associated environmental management works only. With regards to environment and heritage matters, provided that the mitigation measures outlined in this EAR are implemented during construction, the Project is considered to:

- Not create a significant environmental or ecological impact
- Not impact on an area identified as environmentally significant in the Brisbane Airport Environment Strategy (AES)
- Not create a significant impact on the local or regional community

Section 112 – Relationship to State regulations

The Project is exempt from complying with State laws in relation to land use planning and building activities. It should be noted that BAC maintains that wherever reasonable and practicable, they will aim to comply with State legislation in relation to the protection of the environment (BAC 2014a).

Section 132 – Environmental management requirements

A discussion on the applicability of the AEPR to the Project is provided in Section 3.2.2.

Section 182 – Approval for controlled activities

Section 182 of the Airports Act outlines the following to be controlled activities:

a) *"Constructing a building, or other structure, that intrudes into the prescribed airspace;*

b) *Altering a building or other structure so as to cause the building or structure to intrude into the prescribed airspace*

c) *Any other activity that causes a thing attached to, or in physical contact with, the ground to intrude into the prescribed airspace*

d) *Operating a source of artificial light, where:*

   i. *The intensity of the light emitted exceeds the level ascertained in accordance with the regulations; and*

   ii. *The light is capable of blinding or confusing pilots of aircraft operating in the prescribed airspace*

e) *Operating prescribed plant, or a prescribed facility, that reflects sunlight, where:*

   i. *The intensity of the reflected sunlight exceeds the level ascertained in accordance with the regulations; and*

   ii. *The reflected sunlight is capable of blinding pilots of aircraft operating in the prescribed airspace*

f) *An activity that results in air turbulence, where:*

   i. *The level of the turbulence exceeds the level ascertained in accordance with the regulations; and*

   ii. *The turbulence is capable of affecting the normal flight of aircraft operating in the prescribed airspace*

g) *An activity that results in the emission of smoke, dust or other particulate matter, where:*

   i. *The emission exceeds the level ascertained in accordance with the regulations; and*

   ii. *The smoke, dust or particulate matter is capable of affecting the ability of aircraft to operate in the prescribed airspace in accordance with Visual Flight Rules*

h) *An activity that results in the emission of steam or other gas, where:*

   i. *the emission exceeds the level ascertained in accordance with the regulations; and*

   ii. *the steam or gas is capable of affecting the ability of aircraft to operate in the prescribed airspace in accordance with Visual Flight Rules."*

The Project may result in undertaking the controlled activities identified under item c), d), e) and g) in Section 182 of the Airports Act. If undertaking a controlled activity, an approval must be obtained. Section 7 of the *Airports (Protection of Airspace) Regulations 1996* outlines the requirements to obtain approval. The *Airports (Protection of Airspace) Regulations 1996* is discussed in Section 3.2.3.

Section 13 of this EAR provides an assessment of the existing aviation safety requirements for Brisbane Airport and identifies the potential impacts to aviation safety as a result of the Project. Mitigation measures are then provided to ensure that during the Project, BAC meets their duties with regards to managing impacts to aviation safety.

3.2.2 Airports (Environment Protection) Regulations 1997

3.2.2.1 Background

The AEPR ensures the environmental regulation of all Commonwealth owned airports within Australia. The objectives of the AEPR are:

a) *"To establish, in conjunction with national environment protection measures made under section 14 of the National Environment Protection Council Act 1994, a Commonwealth system of regulation of, and accountability for, activities at airports that generate, or have potential to generate:*

   i. *Pollution; or*

   ii. *Excessive noise, and*

b) To promote improving environmental management practices for activities carried out at airport sites."

Section 4.01 of the AEPR states that:

"the operator of an undertaking at an airport must take all reasonable and practicable measures:

a) To prevent the generation of pollution from the undertaking; or

b) If the prevention is not reasonable or practicable – to minimise the generation of pollution from the undertaking".

The requirements for managing the following environmental aspects on Airport land are outlined in the following sections of the AEPR:

- Air quality – Section 2.01
- Surface and groundwater quality – Section 2.02
- Soils – Section 2.03
- Flora and fauna – Section 4.04
- Cultural heritage – Section 4.04 and 4.05
- Noise – Sections 4.06 to 4.09

In addition to the assessment of environmental aspects within the AEPR, baseline monitoring will be conducted within and surrounding the Project site for water, noise, air quality and vibration. Baseline criteria will be established to assess the Project's performance and be used to demonstrate environmental compliance with existing conditions. For contaminated land, procedures will be undertaken as per the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (Amendment 1, 2013) (NEPM 2013) requirements (refer Section 3.2.5) and in consultation with the AEO.

3.2.2.2 Relevance to the Project

The provisions of the AEPR are the overarching environmental requirements by which the Project shall be managed. The following sections state the requirements under the AEPR in relation to the environmental aspects and refer to the relevant sections of the EAR within which environmental aspects are further detailed. It is considered that the mitigation measures outlined for each environmental aspect will enable BAC to meet their duties with regards to the management of environmental impacts under the AEPR.

Air quality

Section 2.01 of the AEPR defines air pollution as:

"when a pollutant is present in air in a quantity, way, or condition, or under a circumstance, in which:

a) harm is likely to be caused to the environment; or

b) unreasonable inconvenience is likely to be caused to a person:

i. at a place other than the immediate vicinity of the source of the pollutant; or

ii. if the source is in a place to which members of the public have access – in that place".

The indicators and goals which are relevant to Airport land include lead, photochemical oxidants, sulphur dioxide, total suspended particulates, nitrogen dioxide, sulphates and carbon monoxide. Schedule 1, Part 1, Table 1 of the AEPR outlines the accepted limits for air pollution by a substance derived from different sources, while Part 2, Table 2 outlines ambient air quality objectives.

Section 8 of the EAR identifies the potential air quality impacts that may occur as a result of the Project and outlines the mitigation measures to manage air quality. Air quality monitoring is recommended to be undertaken, with results being compared to the air quality objectives listed in Schedule 1 of the AEPR and other guidelines as relevant.

Surface water and groundwater quality

Section 2.02 of the AEPR defines water pollution as:

> *"when waters contain a substance or organism that causes or may cause the physical, chemical or biological condition of the waters to be adversely affected or that causes, or is reasonably likely to cause, an adverse effect on beneficial use of the waters".*

Schedule 2 of the AEPR lists the acceptable limits of various physical-chemical, nutrients, metals and biological parameters.

Section 7 of the EAR identifies the potential water quality impacts that may occur as a result of the Project and outlines the mitigation measures to manage water quality. Water quality monitoring is recommended to be undertaken, with results being compared to the water quality objectives listed in Schedule 2 of the AEPR and other guidelines as relevant.

Soils

Soil pollution is defined in Section 2.03 of the AEPR as being a substance which is likely to cause an adverse effect on the chemical or biological condition of soil or groundwater. Pollution of soil is also considered to have occurred when contamination by a substance is reasonably likely to have adverse effects on present or proposed land uses, including effects relating to odour, aesthetics, supporting human occupation and/or flora and fauna. Schedule 3 of the AEPR outlines accepted limits for soil pollution.

Section 5.5 of the EAR provides an assessment of impacts to soils, topography, geology and contamination as a result of the Project. Mitigation measures are outlined in Section 5.6 to manage these matters.

Flora and fauna

Section 4.04 of the AEPR requires the preservation of the environment by ensuring the operator of an undertaking at an airport must take all reasonable and practicable measures to ensure:

a) "There are no adverse consequences for:

i. The local biota and the ecosystems and habitats of native species

b) There are no adverse consequences for:

ii. Flora or fauna that is known to be endangered, or vulnerable, as a species; or

iii. An ecological community that is known to be an endangered ecological community"

Section 6 of the EAR provides an assessment of the flora and fauna impacts that may occur as a result of the Project, and outlines mitigation measures to manage these potential impacts.

Cultural heritage

Section 4.04 of the AEPR requires the preservation of heritage by ensuring the operator of an undertaking at an airport must take all reasonable and practicable measures to ensure:

a) "There are no adverse consequences for:

ii. Existing aesthetic, cultural, historical, social and scientific values of the local area

b) There are no adverse consequences for:

iii. Sites of Indigenous significance on the airport site."

Section 4.05 states that an operator of an undertaking at an airport should give notice of cultural heritage discoveries made during an undertaking.

Section 11 of the EAR provides an assessment of the potential to encounter cultural heritage during construction of the Project. The Kingsford Smith Memorial, which contains the Southern Cross Aircraft, is located approximately 95 m from the Project site, and is potentially significant at a State or Commonwealth level for its historic significance, rarity, aesthetics, technical achievements and associative values. Mitigation measures, such as dust, noise and vibration monitoring, are proposed at the Kingsford Smith Memorial as detailed in Section 11.6.

While it is considered that impacts to cultural heritage are unlikely, the EAR identifies mitigation measures to be implemented in the event of a cultural heritage discovery.

Noise and vibration

Section 4.06 of the AEPR states that:

> *"The operator of an undertaking at an airport must take all reasonable and practicable measures:*
>
> *a) To prevent the generation of offensive noise from the undertaking; or*
>
> *b) If prevention is not reasonable or practicable – to minimise the generation of offensive noise from the undertaking".*

Equipment used within the Project site is to be operated and maintained in a proper and efficient manner to minimise noise levels (Section 4.08 of the AEPR). Section 4.09 of the AEPR states that if using operating equipment, noise control equipment fitted to or supplied with the operating equipment shall be used, otherwise the works would be in contravention of Section 4.06.

No vibration related goals are discussed in the AEPR. The Australian Standard *AS 2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites* provides guidance on noise and vibration control in respect to construction, demolition and maintenance sites and for the preparation of noise and vibration management plans, work method statements and environmental impact studies.

Section 9 provides an assessment of the potential noise and vibration impacts that could occur during construction of the Project. A range of mitigation measures have been recommended to ensure that the Project can comply with the AEPR noise limits and other vibration guidelines.

3.2.3 Airports (Protection of Airspace) Regulations 1996

3.2.3.1 Background

Certain airspace around Brisbane Airport (known as 'prescribed airspace') is protected under the *Airports (Protection of Airspace) Regulations 1996*. The prescribed airspace is made up of:

- The obstacle limitation surface (OLS) which protects aircraft operating in visual meteorological conditions
- The Procedures for Air Navigation Services Aircraft Operations (PANS-OPS) surfaces, which protect aircraft operating in instrument meteorological conditions (eg in poor weather)
- Any additional airspace that has been declared under the regulations by the Secretary of the Department of Infrastructure and Regional Development (DIRD)

As discussed in Section 3.2.1 above, the Airports Act requires a person to obtain approval from the Secretary of the DIRD to undertake controlled activities within the prescribed airspace.

3.2.3.2 Relevance to the Project

Section 13 within this EAR provides an assessment of the existing aviation safety requirements and the potential impacts due to the Project. Mitigation measures are provided to ensure that during the Project, BAC meets their duties with regards to potential impacts to aviation safety.

3.2.4 Environment Protection and Biodiversity Conservation Act 1999

3.2.4.1 Background

The EPBC Act provides that any action (ie a project, development, undertaking, activity or series of activities) which has, will have or is likely to have a significant impact on a matter of National Environmental Significance (NES), or other matter protected under the Act, such as the environment on Commonwealth land, requires approval from the Commonwealth Minister for the Environment (the Minister) through the Department of the Environment and Energy (DoEE).

Matters of NES include:

- World Heritage properties
- National Heritage properties
- Wetlands of international importance
- Listed threatened species and communities
- Listed migratory species
- Nuclear actions
- Marine environment
- Great Barrier Reef Marine Park
- Commonwealth land
- Actions taken by the Commonwealth
- Commonwealth heritage places outside of Australian jurisdiction

If the Minister decides that approval is required, the proposed action is termed a 'controlled action'. The proposal will then have to go through a formal assessment and approval process before it can proceed.

3.2.4.2 Relevance to the Project

The EPBC Act protects the environment on Commonwealth land and regulates those actions of Commonwealth departments and agencies that may have a significant impact on the environment. Therefore, BAC should have due consideration to the EPBC Act to minimise environmental impacts when working within the Project site.

A fauna and flora assessment within the Project site was undertaken by a qualified senior ecologist and an environmental scientist on 6 March 2017. No flora or fauna species or communities listed under the EPBC Act were identified during the field investigation (refer Section 6.2.2). Given the low habitat values identified, it is considered unlikely that the proposed works will impact upon listed threatened species or ecological communities under the EPBC Act.

The *Significant impact guidelines 1.1 – Matters of National Environmental Significance* (Department of the Environment 2013a) are used to determine whether the Project is likely to have a significant impact on a matter of NES under the EPBC Act. Table 3.1 outlines the relevance of each matter of NES to the Project at Brisbane Airport.

Table 3.1 Matters of national environmental significance under the EPBC Act

Aspect	Relevance to Project	Significant impact
World Heritage properties	There are no World Heritage properties situated within or in the immediate vicinity of the Brisbane Airport.	Unlikely
National Heritage places	There are no National Heritage places situated within or in the immediate vicinity of the Brisbane Airport.	Unlikely
Wetlands of international importance	The nearest Ramsar wetland of international importance is Moreton Bay, located adjacent to Brisbane Airport and approximately 5 km downstream of the Project site.	Unlikely
Listed threatened species and ecological communities	No flora or fauna species or communities listed under the EPBC Act were identified during the field investigation (refer Section 6.3.2). Given the low habitat values identified, it is considered that the proposed works will not impact upon listed threatened species or ecological communities under the EPBC Act.	Unlikely
Listed migratory species	No listed migratory species listed under the EPBC Act were identified during the field investigation (refer Section 6.3.2). Given the low habitat values identified, it is considered that the proposed works will not impact upon listed migratory species under the EPBC Act.	Unlikely

Aspect	Relevance to Project	Significant impact
The Great Barrier Reef Marine Park	Brisbane Airport does not occur within or in the immediate vicinity of the Great Barrier Reef Marine Park.	Unlikely
Nuclear action	The Project does not constitute a nuclear action.	Unlikely
Commonwealth marine areas	Brisbane Airport does not occur within or in the immediate vicinity of a Commonwealth Marine Area.	Unlikely

Given the Project is located at Brisbane Airport, which is situated on Commonwealth land, the *Significant impact guidelines 1.2 – Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* (Department of the Environment 2013b) were used to determine if the Project has a significant impact on the environment. A self-assessment of works against the criteria provided in the guidelines was conducted (refer Table 3.2) (Department of the Environment 2013b).

Table 3.2 Self-assessment of significant impact of works

Self-assessment criteria	Self-assessment
Landscapes and soils *Is there a real chance or possibility that the action will:* ▪ *Substantially alter natural landscape features?* ▪ *Cause subsidence, instability or substantial erosion?* ▪ *Involve medium or large-scale excavation or soil or minerals?*	The majority of the Project site contains casuarina plantations, which are not considered to be natural landscapes. There are natural drainage lines and wetland areas, which will be modified as a result of the Project, however these are not considered to be substantial compared with the wider Brisbane Airport. As the site is low-lying, the works will generally comprise filling activities rather than excavation. In addition, all works will be managed by an Erosion and Sediment Control Plan (ESCP) to avoid substantial erosion or sediment loss.
Coastal landscapes and processes *Is there a real chance or possibility that the action will:* ▪ *Alter coastal processes, including wave action, sediment movement or accretion, or water circulation patterns* ▪ *Permanently alter tidal patterns, water flows or water quality in estuaries* ▪ *Reduce biological diversity or change species composition in estuaries, or* ▪ *Extract large volumes of sand or substantially destabilise sand dunes?*	The works do not involve any alteration of coastal processes or the excavation of sand. Existing estuarine drainage lines will be re-aligned into a single channel along the north western boundary of the site to retain water flow and quality and to reduce the potential for flooding. An ecological investigation was conducted on 6 March 2017 by a suitably qualified Aurecon senior ecologist. No species listed under the EPBC Act and/or the *Nature Conservation Act 1992* (NC Act) were identified (refer Section 6.3.2) and as such, the Project is not expected to reduce biological diversity of Brisbane Airport.
Ocean forms, ocean processes and ocean life *Is there a real chance or possibility that the action will:* ▪ *Reduce biological diversity or change species composition on reefs, seamounts or in other sensitive marine environments* ▪ *Alter water circulation patterns by modification of existing landforms or the addition of artificial reefs or other large structures* ▪ *Substantially damage or modify large areas of the seafloor or ocean habitat, such as sea grass* ▪ *Release oil, fuel or other toxic substances into the marine environment in sufficient quantity to kill larger marine animals or alter ecosystem processes, or* ▪ *Release large quantities of sewage or other waste into the marine environment?*	The works will not significantly impact ocean forms, ocean processes or ocean life as the nearest ocean is Moreton Bay, located approximately 5 km downstream. The Project will also adopt appropriate mitigation measures to minimise impacts to water quality (refer Section 7.6). In addition, as the works involve clearing and earthwork activities only, hazardous substances or waste material will not be generated in sufficient quantities and their storage and use will be managed under the Project Environmental Management Plan (EMP).

Self-assessment criteria	Self-assessment
Water resources *Is there a real chance or possibility that the action will:* ■ *Measurably reduce the quantity, quality or availability of surface or ground water* ■ *Channelise, divert or impound rivers or creeks or substantially alter drainage patterns, or* ■ *Measurably alter water table levels?*	The works will involve vegetation clearing and earthworks with potential to temporarily reduce surface water quality during construction activities. However, these impacts will be managed under an ESCP. There are two drainage lines that flow through the Project site from Landers Pocket Drain and minor drainage lines throughout. As part of the Project, these drainage lines will be realigned into a single channel along the north western boundary of the site, eventually feeding directly into the Kedron Brook Floodway Drain. As a result, the drainage patterns of the Brisbane Airport and surrounds will not be substantially altered. Surcharging activities will be managed through implementation of the EMP to avoid measurable alteration of water table levels.
Pollutant, chemicals, and toxic substances *Is there a real chance or possibility that the action will:* ■ *Generate smoke, fumes, chemicals, nutrients, or other pollutants which will substantially reduce local air quality or water quality* ■ *Result in the release, leakage, spillage, or explosion of flammable, explosive, toxic, radioactive, carcinogenic, or mutagenic substances, through use, storage, transport, or disposal* ■ *Increase atmospheric concentrations of gases which will contribute to the greenhouse effect or ozone damage, or* ■ *Substantially disturb contaminated or acid-sulphate soils?*	There is potential for contamination from minor spills or leaks of fuel or other chemicals during clearing and earthworks. This risk will be managed through the Project EMP. While the works will involve vegetation clearing and minor emissions from vehicles, it is not anticipated to substantially contribute to the greenhouse gases or ozone damage. Vegetation clearing and earthworks have the potential to generate dust, which may temporarily reduce the local air quality, however this will be managed through the Project EMP. A contaminated land investigation was conducted across the Project site and detected minor concentrations of heavy metals and per- and poly-fluoroalkyl substances (PFAS) widespread across the site. These concentrations were below relevant screening criteria and can be managed under the Project EMP (refer Section 5.4.4). Both actual and potential ASS were detected across the Project site and will be managed during construction through the implementation of an ASS Management Plan.
Plants *Is there a real chance or possibility that the action will:* ■ *Involve medium or large-scale native vegetation clearance* ■ *Involve any clearance of any vegetation containing a listed threatened species which is likely to:* – *Result in a long-term decline in a population or which threatens the viability of the species* – *Introduce potentially invasive species* – *Involve the use of chemicals which substantially stunt the growth of native vegetation, or* – *Involve large-scale controlled burning or any controlled burning in sensitive areas, including areas which contain listed threatened species?*	The Project will involve approximately 55.9 ha of vegetation clearance of predominately casuarina plantations with some mangrove communities. This comprises approximately 3.5% of the total vegetation within Brisbane Airport. An ecological investigation was conducted on 6 March 2017 by a suitably qualified Aurecon senior ecologist. No conservation significant species listed under the EPBC Act and/or the NC Act were identified (refer Section 6.3.2). There is potential for weed species to be introduced by construction vehicles, machinery and/or personnel, however this will be managed under the Project EMP. The works will not involve the use of chemicals or controlled burning for the control/clearing of vegetation.

Self-assessment criteria	Self-assessment
Animals *Is there a real chance or possibility that the action will:* ▪ *Cause a long-term decrease in, or threaten the viability of, a native animal population or populations, through death, injury or other harm to individuals* ▪ *Displace or substantially limit the movement or dispersal of native animal populations* ▪ *Substantially reduce or fragment available habitat for native species;* ▪ *Reduce or fragment available habitat for listed threatened species which is likely to displace a population, result in a long-term decline in a population, or threaten the viability of the species* ▪ *Introduce exotic species which will substantially reduce habitat or resources for native species, or* ▪ *Undertake large-scale controlled burning or any controlled burning in areas containing listed threatened species?*	An ecological investigation was conducted on 6 March 2017 by a suitably qualified Aurecon senior ecologist. No conservation significant species listed under the EPBC Act and/or the NC Act were identified (refer Section 6.3.2). The Project site is bound by Airport Drive, Moreton Drive and Nancy Bird Way and as such, when considering ecological function, is already significantly fragmented. In addition, the majority of the site contains casuarina plantations, which are not considered to provide substantial habitat for native fauna populations. The works will not involve the introduction of exotic species or use controlled burning for vegetation clearing.
Impacts on people and communities *Is there a real chance or possibility that the action will:* ▪ *Substantially increase demand for, or reduce the availability of, community services or infrastructure which have direct or indirect impacts on the environment, including water supply, power supply, roads, waste disposal, and housing* ▪ *Affect the health, safety, welfare or quality of life of the members of a community, through factors such as noise, odours, fumes, smoke, or other pollutants* ▪ *Cause physical dislocation of individuals or communities, or* ▪ *Substantially change or diminish cultural identity, social organisation or community resources?*	A traffic assessment will be conducted as part of the Project. However, given traffic associated with the Project will be temporary in nature during the construction phase, traffic volumes generated by the Project will not constitute a significant impact (refer Section 13.4). The Project site is situated in the Brisbane Airport with predominately industrial activities located nearby. Sensitive receptors to the Project are discussed in Section 8. Impacts such as noise, odours, fumes, smoke or dust will not impact the local community. There will be no dislocation of individuals or communities as part of the Project. There is no change to cultural identify, social organisation or community resources as the Project is situated in the Airport Central (Airport Drive West) area and is zoned as Mixed Use under the Brisbane Airport Master Plan 2014.

Self-assessment criteria	Self-assessment
Heritage *Is there a real chance or possibility that the action will:* ▪ *Permanently destroy, remove or substantially alter the fabric (physical material including structural elements and other components, fixtures, contents, and objects) of a heritage place* ▪ *Involve extension, renovation, or substantial alteration of a heritage place in a manner which is inconsistent with the heritage values of the place* ▪ *Involve the erection of buildings or other structures adjacent to, or within important sight lines of, a heritage place which are inconsistent with the heritage values of the place* ▪ *Substantially diminish the heritage value of a heritage place for a community or group for which it is significant* ▪ *Substantially alter the setting of a heritage place in a manner which is inconsistent with the heritage values of the place, or* ▪ *Substantially restrict or inhibit the existing use of a heritage place as a cultural or ceremonial site?*	One item with historic heritage significance has been identified within the vicinity of the Project site; the Kingsford Smith Memorial). However, no direct impacts are expected to occur to the Kingsford Smith Memorial (refer Section 11.5). The Project is located 95 m from the Kingsford Smith Memorial and it is understood that a buffer of vegetation will remain between the Kingsford Smith Memorial and the proposed development, which will provide a visual barrier. The amenity, use and setting of the Kingsford Smith Memorial will not significantly change as a result of the proposed development. Mitigation measures to be implemented for the protection of heritage, including incidental finds, are provided in Section 11.6. The existing Heritage Management Plan will be used to manage Aboriginal Cultural Heritage matters throughout Project activities.

Given the results of the self-assessments, the Project does not need to be referred to the DoEE.

3.2.5 National Environment Protection Council Act 1994

3.2.5.1 Background

The *National Environment Protection Council Act 1994* (NEPC Act) provides for the establishment of a National Environment Protection Council (NEPC) and that the Commonwealth, the States and territories will make joint legislative provision for the establishment of a body to determine national environment protection measures for air, water, soil and noise pollution.

National Environment Protection (Ambient Air Quality) Measure (Air NEPM)

National ambient air quality standards were set for carbon monoxide, ozone, sulphur dioxide, nitrogen dioxide, lead and particles under the Air NEPM. To comply with the requirements of the Air NEPM and the NEPC Act, the Queensland Department of Environment and Heritage Protection (EHP) have established a number of monitoring stations in Queensland to determine whether any exceedances of the national ambient air quality standards occur.

National Environment Protection (Air Toxics) Measure (Air Toxics NEPM)

In 2004, the NEPC developed the Air Toxics NEPM to provide a framework for monitoring, assessing and reporting on ambient levels of five air toxins including benzene, formaldehyde, benzo(a)pyrene as a marker for polycyclic aromatic hydrocarbons, toluene and xylenes. Schedule 3 of the Air Toxics NEPM outlines the monitoring investigation levels for these air toxins.

National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amendment 1, 2013) (NEPM 2013)

NEPM 2013 establishes a nationally consistent approach to the assessment of site contamination to ensure sound environmental management practices are adopted. Schedule A identifies the recommended process for the assessment of site contamination, while Schedule B provides general guidelines, such as the use of investigation levels for soil and groundwater, to assess site contamination.

3.2.5.2 Relevance to the Project

Air quality standards are discussed and addressed in further detail in Section 8. The section also provides an assessment of the existing air environment and potential impacts from the Project. Mitigation measures are provided to ensure that during the Project, BAC will meet their duties with regards to managing air quality during the Project in accordance with the relevant air quality standards.

Further discussion regarding contamination in relation to the Project site and the applicability of the NEPM 2013 is outlined in Section 5.4.4. The section also provides an assessment of the existing contamination within the Project site and the potential impacts to the Project. Mitigation measures are provided to ensure that during the Project, BAC meets their duties with regards to the NEPM 2013.

3.3 Pre-existing Airport Land

3.3.1 General

Relevant airport policy and planning documents applicable to this Project include:

- Brisbane Airport Master Plan
- Airport lease
- Brisbane Airport Environment Strategy
- Brisbane Airport Development Control Document
- Airport Technical Guidelines

The relevance of these policy and planning documents is assessed below.

3.3.2 Brisbane Airport Master Plan

3.3.2.1 Background

The BAC Master Plan (BAC 2014b) sets out the vision for current and future airport land use and the development plan over the next 20 years. Under the Airports Act, BAC is required to review its Master Plan every five years. The Australian Government approved Brisbane Airport's 2014 Master Plan on 13 January 2015.

BAC's vision for Brisbane Airport is to be world class – a distinctive place that visitors keep coming back to, and the best possible partner for airlines and businesses (BAC 2014b).

3.3.2.2 Assessment process

The Master Plan sets out the land use planning and development intent on the airport site. Before BAC grants consent for any intended land use, it must have regard to the purpose outcomes of the relevant zoning, the overall outcome for the precinct or sub-precinct and the Master Plan's development objectives. The results of BAC's assessment are then passed onto the Airport Building Controller (ABC) and AEO for building approval. This is discussed further in Section 3.3.5.

3.3.2.3 Master Plan precincts

The 2014 Master Plan has consolidated development land into five sub-precincts (and nine distinct sub-precincts), which are intended to create and maintain clusters of businesses and operations to generate a sense of identity and community:

1. Airport South (Airport Industrial Park, Da Vinci and Export Park)
2. Airport East
3. Airport Central (Skygate, Airport Drive West, Domestic T2, International T1 and Moreton Drive West)

4. Airport West (Central Parking Area)
5. Airport North

In addition, a separate conservation area known as the Biodiversity Zone, accounts for Brisbane Airport's protection of high value environmental lands.

In each precinct, BAC has nominated land use zonings along with zoning statements, zoning outcomes and intended uses, with all developments subject to BAC's consent (BAC 2014b).

Some developments trigger the requirement for an MDP under the Airports Act before a building approval can be issued and a construction activity can commence. An MDP must be consistent with the approved Master Plan. Section 89 of the Airports Act prescribes those activities that require an MDP as 'major airport development'. Under the Act, the Project may trigger the following:

(e) Constructing a new building, where:

(i) the building is not wholly or principally for use as a passenger terminal; and

(ii) the cost of construction exceeds $20 million or such higher amount as is prescribed; or

(m) A development of a kind that is likely to have significant environmental or ecological impact; or

(n) A development which affects an area identified as environmentally significant in the environment strategy; or

(na) A development of a kind that is likely to have a significant impact on the local or regional community

3.3.2.4 Relevance to the Project

The Project site is located in the Airport Central (Airport Drive West) sub-precinct, and is zoned by BAC as "Mixed use". It is considered that the Project is consistent with intended uses under the 'Mixed use' zoning for the Project site. Further discussion on zoning and land use for the Project site is provided in Section 4 of this EAR.

The Project will not have a significant environmental or ecological impact as long as mitigation measures recommended in this EAR are implemented. In addition, the associated construction for the Project will be below $20 million in value. Therefore, an MDP does not need to be prepared. This is further discussed in Section 3.2.1.2.

This EAR provides an assessment of the bulk earthworks and site preparation component of the Project only and does not assess future intended uses within the Project site. Assessment of the future use of the Project site will be undertaken separately to ensure compliance with the Airports Act.

3.3.3 Airport lease

3.3.3.1 Background

BAC purchased the long-term lease (50 + 49 years) of Brisbane Airport from the Commonwealth and took over management and operations on 2 July 1997. The planning and development of Brisbane Airport is regulated by the DIRD under the Airports Act.

When BAC became the airport-lessee company for Brisbane Airport in July 1997, it assumed certain pre-existing lessor obligations under various leases. BAC also became the head-lessee under the airport lease subject to a number of other interests in the airport land (such as easements).

3.3.3.2 Relevance to the Project

Given that the Project is compliant with the intent of the BAC Master Plan, the Project is considered to fully comply with the requirements of the Airport lease. There are no known contractual or other rights affecting the Project site, which would constrain the development of the Project, with the exception of the Energex Lease EGXA on SP232747 for 110 kV cables and a permit for 33 kV cable installations.

3.3.4 Brisbane Airport Environmental Strategy (AES)

3.3.4.1 Background

The AES (BAC 2014a) is the formal blueprint of BAC's commitment to world best practice environmental sustainability. The AES outlines a framework for environmental management at Brisbane Airport and responds to the requirements of the Airports Act and AEPR. The AES now forms part of the Master Plan.

The 2014 AES was prepared in accordance with the Airports Act and AEPR. It covers a wide range of issues including environmentally significant areas (ESAs), sources of environmental impact and environmental management. The environment and sustainability policy is seen as the foundation of the Environmental Management System (EMS) and AES and guides the implementation of both. The policy represents a formal undertaking by BAC to give due consideration to the potential environmental impacts of all aspects of BAC's activities and operations.

The AES covers all environmental matters arising from the operation and expansion at the Brisbane Airport site in accordance with the Airport Legislation. Each of the sections detailed in the AES are in direct response to the specific requirements listed in the Airport Legislation. The AES does not cover noise and air pollution from aircraft movements, which is regulated under separate legislation, the Commonwealth *Air Navigation (Aircraft Engine Emissions) Regulations* and *Air Navigation (Aircraft Noise) Regulations*.

The AES adopts relevant legislation that is applicable to environmental regulation or activities on airport (whether Commonwealth or State) where reasonable and practicable. The AES also identifies areas as ESAs.

3.3.4.2 Relevance to the Project

This EAR provides an assessment of the potential environmental impacts that may occur as a result of the Project and therefore complies with BAC's overall environmental policy as outlined within the AES.

The Project site is not located within an ESA, nor does it impact on an ESA.

3.3.5 Airport development and building approvals

3.3.5.1 Background

All building and development works are subject to internal assessment which begins with BAC initially checking the proposed development for consistency and compliance with the development intent outlined in a range of documents including:

- The approved Master Plan
- The approved AES
- BAC's relevant Airport Precinct Plan and associated Development Control Documents
- BAC's Airport Technical Guidelines

Once the development has been evaluated against BAC's assessment criteria, the on site Australian Government representatives, the ABC and the AEO, undertake the regulatory assessment requirements that include consideration of planning, building and environment issues.

Building approvals are issued by the ABC, who is appointed by the DIRD. The AEO (employed by the DIRD) recommends to the ABC the conditions to be placed on approval for environmental management. Building approval is required for new buildings and structures (including runways, taxiways and aprons), earthworks, demolition, electrical and hydraulic works. The ABC assesses the proposal's design and compliance with the Australian Building Standards.

Building approvals cannot be issued by the ABC without written consent from BAC, confirming that the development is consistent with the development intent for the precinct.

3.3.5.2 Relevance to the Project

Master Plan and Airport Environment Strategy

Sections 3.3.2 and 3.3.4 summarise the consistency of the Project with the Master Plan and AES respectively.

Airport Precinct Plan and Development Control Documents

BAC has developed individual Precinct Plans that are consistent with the BAC Master Plan. Each Precinct Plan is guided by the Master Plan's development objectives, zoning and airport precinct overall outcomes to meet infrastructure demand, manage growth and facilitate business generation for the airport and region over the next 20 years. The Development Control Document (DCD) implements the Precinct Plan on the ground.

The DCD provides minimum development guidelines to be adopted when designing buildings and sites within the Airport Precincts. The DCD sets out performance criteria and associated controls to achieve the performance criteria.

The majority of the DCD focuses on the development guidelines to be adopted in the design of buildings and sites within the Airport Precincts. The assessment of buildings is outside of the scope of this EAR. However, where the DCD provides construction-related guidance, an assessment of the Project's compliance with the DCD has been undertaken in Table 1 in Appendix B.

For matters addressing detailed design of the Project, it has been assumed that the requirements are the responsibility of the Designer and/or Contractor to comply with. The Designer and Contractor will need to review their works to ensure compliance with the DCD.

Airport Technical Guidelines

The Airport Technical Guidelines were prepared by BAC to assist designers, contractors and other specialists involved in preparing design and contract documentation for works on Brisbane Airport. The Airport Technical Guidelines present a number of planning phase requirements to be considered.

The planning phase requirements outlined in the Airport Technical Guidelines have been reviewed as part of this EAR and the Project is consistent with these guidelines where relevant (refer Table 2 in Appendix B).

During the next phase of the Project, the Designer and Contractor will need to review their works to ensure compliance with the Airport Technical Guidelines.

Register of building applications

Section 4 provides a review of BAC's register of building applications to determine whether any current building applications and approvals are applicable to land within close proximity to the Project site.

3.4 Consistency with State and Local Government Planning

While the environment is principally administered by Commonwealth legislation when on airport land, State legislation may be applicable in certain circumstances where no Commonwealth legislation exists or where State legislation can operate concurrently. The BAC 2014 AES refers to State legislation and guidelines where required.

BAC is required by the Master Plan and Airports Act (and associated regulations) to address the extent, if any, of consistency with relevant State planning instruments. BAC is committed to consultative processes with relevant State Government agencies and the Brisbane City Council (BCC) regarding the strategic planning of key infrastructure. Accordingly, BAC seeks to ensure that development at Brisbane Airport, where possible, is compatible with State planning strategies (BAC 2014b). This section evaluates the consistency of the Project with State legislation that would apply if the Project was not under the jurisdiction of the Commonwealth.

The following legislation is considered to be relevant to the Project for environmental management purposes and is assessed below:

- *Environmental Protection Act 1994*
- *Aboriginal Cultural Heritage Act 2003*
- *Queensland Heritage Act 1992*
- *Fisheries Act 1994*
- *Biosecurity Act 2014*
- *Nature Conservation Act 1992*
- *Water Act 2000*

3.4.1 Environmental Protection Act 1994

3.4.1.1 Background

The *Environmental Protection Act 1994* (EP Act) and the *Environmental Protection Regulation 2008* (EP Reg) provide a framework for managing Queensland's environment within the principles of ecologically sustainable development.

A key feature of the EP Act is the consideration of a general environmental duty. Individuals undertaking any activity must take all reasonable and practical measures to prevent or minimise environmental harm.

Prescribed ERAs

The EP Act, together with the *Planning Act 2016*, provides a licensing and approval regime for a range of prescribed environmentally relevant activities (ERAs), which are activities with the potential to cause environmental harm through the release of contaminants. Prescribed ERAs are defined under Schedule 2 of the EP Reg. To conduct a prescribed ERA, an environmental authority is required. If the prescribed ERA is also listed as a concurrence activity, a development approval is also required. Codes of environmental compliance can be used to carry out certain ERAs in accordance with well established, standard practices.

Environmental Protection Policies

The EP Act outlines the responsibility and the duty of care all persons have to the environment and the scope and content for preparing environmental protection policies (EPPs). EPPs identify particular environmental values to be enhanced or protected and generally state the objectives to be achieved and maintained.

Disposal of contaminated soil from land

Section 424 of the EP Act contains requirements for the lawful disposal of contaminated soil, including asbestos containing material (ACM). A person proposing to remove and dispose of contaminated soil from land which is recorded on either the Environmental Management Register (EMR) or the Contaminated Land Register (CLR) to an off-site location must obtain a disposal permit from EHP in order to lawfully undertake the works. Disposal permits enable appropriate and legal disposal and tracking of contaminated soil or materials.

3.4.1.2 Relevance to the Project

The Project does not need to comply with the requirements of the EP Act. However, the Project can still demonstrate that it complies with the intent of the EP Act (ie the general environmental duty) as BAC will undertake Project activities in accordance with the measures recommended in this EAR, and as listed in the Environmental Management Plan (EMP) to be prepared for the Project.

Environmentally relevant activities (ERAs)

The Project will consist of screening and rock crushing activities. These activities are listed as ERAs under the EP Act. Screening activities are covered by ERA 16, while crushing activities are covered by ERA 33. Eligibility criteria and standard conditions have been developed for ERA 16, but not for ERA 33.

While BAC is not required to comply with the *Eligibility criteria and standards conditions for screening (more than 100,000 tonnes but not more than 1 million tonnes of material in a year) (ERA 16)* when

undertaking activities covered by ERA 16, the criteria provide guidance on good practice management to ensure environmental risks associated with the operation of an ERA are able to be managed with standard conditions.

Eligibility criteria relate to the following matters:

- Activity size (ie how much material will be screened)
- Activity location relative to sensitive receptors
- The volume of fuel used
- The release of aqueous waste from the activity to water

The standard conditions for the Eligibility Criteria (ERA 16) (and the sections of the EAR that address these issues) are:

- Identifying environmental risks for the Project (throughout the EAR)
- Establishing control measures that minimise the potential for environmental harm (throughout the EAR)
- Ensuring plant and equipment is maintained (refer Sections 8 and 9)
- Air quality (refer Section 8)
- Fuels and chemicals (refer Section 12)
- Noise and vibration (refer Section 9)
- Land including contamination and ASS (refer Section 5)
- Water (refer Section 7)
- Waste (refer Section 12)

No eligibility criteria or standard conditions have been developed for ERA 33 (crushing, milling, grinding or screening). Notwithstanding, should the Project adopt the management measures outlined within this EAR, it is considered that the risks associated with undertaking the crushing and screening activities can be appropriately managed.

Environment Protection Policies (EPPs)

EPPs cover air, noise and water through the following policies:

- *Environmental Protection (Air) Policy 2008* (EPP (Air))
- *Environmental Protection (Water) Policy 2009* (EPP (Water))
- *Environmental Protection (Noise) Policy 2008* (EPP (Noise))

With regards to air quality, water quality and noise, there are both Commonwealth and State requirements. BAC believes that it is more appropriate to adopt the Commonwealth requirements, rather than State requirements, except in instances where the Commonwealth legislation is silent on certain aspects.

In relation to air quality, the AEPR, Air NEPM, Air Toxics NEPM and the EPP (Air) do not provide dust deposition levels. However, it is noted that EHP published the *Guideline: Application requirements for activities with impacts to air* (EHP 2014) that recommends assessment of dust nuisance against a dust deposition limit value of 120 mg/m^2/day averaged over a month. According to AS/NZS 3580.10.1:2003, dust deposition monitoring results should be normalised to a 30-day month, meaning that the 120 mg/m^2/day equates to 3.6 g/m^2/month. Accordingly, this dust deposition limit can be applied to this Project (refer Section 8).

For water quality, the AEPR criteria are the most applicable to the Project. Accordingly, the AEPR is used for this Project to characterise the receiving waters, rather than the EPP (Water) (refer Section 7).

In relation to noise, the AEPR construction noise criteria have been adopted for the Project rather than the criteria listed in the EPP (Noise) (refer Section 9).

3.4.2 Aboriginal Cultural Heritage Act 2003 and Queensland Heritage Act 1992

3.4.2.1 Background

The *Aboriginal Cultural Heritage Act 2003* (ACH Act) requires all persons undertaking an activity to "take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage (the 'cultural heritage duty of care')".

The *Queensland Heritage Act* 1992 (QH Act) provides for the conservation of Queensland's historical cultural heritage, including places, trees, natural formations and buildings of cultural heritage significance.

3.4.2.2 Relevance to the Project

To comply with the duty of care under the ACH Act, mitigation measures will need to be included in the EMP.

Section 11 within this report provides an assessment of the existing environment for cultural heritage and potential impacts from the Project. Mitigation measures are then provided to ensure that during the Project, BAC meets their duties with respect to the 'cultural heritage duty of care' under the ACH Act and QH Act.

3.4.3 Fisheries Act 1994

3.4.3.1 Background

The *Fisheries Act 1994* (Fisheries Act) provides for the management, use, development and protection of fisheries resources and fish habitats, and the management of aquaculture activities. The Act holds provisions for:

- Removal, destruction and/or damage to marine plants, including mangroves
- Works in a declared fish habitat
- Waterway barrier works

3.4.3.2 Relevance to the Project

Outside of Brisbane Airport, works for the above activities would be assessable development according to Schedule 7, Part 3, Sections 6 – 8 of the *Planning Regulation 2017*. Self-assessable codes may be used for low-impact development involving disturbance to marine fish habitats and water barriers. However, given State legislation does not apply to the Project, a development approval will not need to be sought for these activities. BAC, wherever possible, may seek to comply with policy intents of the relevant fisheries codes.

It should be noted that BAC has a designated offset area of 285 ha, which equates to approximately 10% of airport land. This area allows for offsetting for previously cleared areas, as well as for future clearing activities, such as the Project subject to this EAR.

The ecological survey undertaken for the Project involved identifying the vegetation communities located within the Project site (refer Section 6). Two vegetation communities were identified within the Project site that constitute marine areas under the provisions of the Fisheries Act, including:

- Mangrove (*Avicennia marina*) tidal community
- Marine wetland with mangroves

Mitigation measures are provided to ensure that during the Project, BAC meets their duties with regards to the management of flora and fauna within the Project site.

3.4.4 Biosecurity Act 2014

3.4.4.1 Background

The purpose of the *Biosecurity Act 2014* is to provide measures to safeguard the economy, agriculture and tourism industries and environment from:

- Weed and pest species
- Diseases
- Contaminants

Under the Act, individuals and organisations (eg landholders, developers etc) whose activities pose a biosecurity risk have a general biosecurity obligation meaning they must:

- Take all reasonable and practical steps to prevent or minimise a biosecurity risk
- Minimise the likelihood of causing a biosecurity event and limit the consequences of such an event
- Prevent or minimise the adverse effects the risk could have and refrain from doing anything that might exacerbate the adverse effects

A biosecurity event is caused by a weed/pest, disease or contaminant that is or is likely to cause a significant impact on human health, social amenity, the economy or the environment.

Schedules 1 and 2 of the Act lists prohibited matter and restricted matter respectively, which are detailed in Table 3.3.

Table 3.3 Prohibited and restricted matter under the *Biosecurity Act 2014*

Biosecurity matter	Description	Actions required
Prohibited matter	Prohibited matter is biosecurity matter that is not found in Queensland but would have a significant adverse impact if it entered the State.	If prohibited matter is present, the following actions must be taken: - Report to Biosecurity Queensland within 24 hours - Minimise the risk of the prohibited matter
Restricted matter	Restricted matter is biosecurity matter that is already present in Queensland but requires specific actions to control the spread and impact. There are seven categories of restricted matter.	Categories 1 and 2 restricted matter must be reported to an inspector within 24 hours. Category 3 restricted matter must not be given as a gift, sold, traded or released into the environment unless under a Restricted Matter Permit. Category 4 restricted matter must not be moved this restricted matter to ensure that it does not spread into other areas of the state. Category 5 restricted matter must not be kept or possessed unless under a permit of the *Biosecurity Act 2014* or another Act. Category 6 restricted matter must not be fed as feeding this restricted matter may cause their numbers to increase and negatively impact the economy or the environment. Category 7 restricted matter includes noxious fish that must be killed and disposed appropriately.

Source: Department of Agriculture and Fisheries 2016a

3.4.4.2 Relevance to the Project

The ecological survey undertaken for the Project site assessed the presence of weeds and pests and identified their classifications according to the *Biosecurity Act 2014* (refer Section 6). Eight flora species were identified as Schedule 2 plants under the *Biosecurity Act 2014*. These weed species consisted of the following:

- *Ambrosia artemisiifolia*
- *Asparagus aethiopicu*
- *Celtis sinensis*
- *Dolichandra unguis-cati*

- *Asparagus plumosus*
- *Baccharis halimifolia*
- *Lantana camara*
- *Schinus terebinthifolius*

Section 6 assesses the potential impacts to the Project due to weeds and pests and recommends mitigation measures to ensure that during the Project, BAC can manage declared weeds and pests within the Project site in accordance with the *Biosecurity Act 2014*.

3.4.5 Nature Conservation Act 1992

3.4.5.1 Background

The *Nature Conservation Act 1992* (NC Act) provides a comprehensive strategy for the conservation and management of Queensland's native animals and plants. Sections 88 and 89 of the NC Act make it an offence for a person to 'take' a listed species without a licence, permit, authorisation granted under a regulation, an exemption under a regulation or under a conservation plan applicable to the species. The *Nature Conservation Regulation 2006* (NC Reg) applies to the clearing of protected plants in the wild. All native plants in Queensland are protected plants.

Wildlife (animals and plants) can be declared under the Act within the following classes:

- Extinct in the wild wildlife
- Endangered wildlife
- Vulnerable wildlife
- Near threatened wildlife
- Least concern wildlife
- International wildlife
- Prohibited wildlife

3.4.5.2 Relevance to the Project

Section 6 of this EAR provides an assessment of the existing flora and fauna within the Project site and identifies potential impacts from the Project. Mitigation measures are then provided to ensure that during the Project, BAC meets their duties with regards to the management of flora and fauna within the Project site and are consistent with the requirements of the NC Act.

The Protected Plants Flora Survey Trigger Map (refer Appendix C) indicates that the Project site is not located within a high risk area and as such, provisions of the NC Act do not apply to the clearing of protected plants.

The ecological survey undertaken for the Project involved identifying the flora and fauna species located within the Project site (refer Section 6). The classification of these species under the NC Act was also identified. No conservation significant flora species were identified during the ecological survey. Fourteen bird species and one reptile were recorded during the survey, all of which were least concern species under the NC Act, with the exception of one species (ie Rainbow Bee-eater *Merops ornatus*), which is listed as Marine.

3.4.6 Water Act 2000

3.4.6.1 Background

The *Water Act 2000* (Water Act) provides a legislative base for the sustainable planning of Queensland's non tidal waters. The Water Act requires the preparation of a Water Resource Plan, and when necessary, resource operation plans, which ensure that water is equitably managed to preserve the existing quality of life and aquatic ecosystems.

A Water Resource Plan details what the government aims to achieve for a catchments social, economic and environmental needs. The *Water Resource (Moreton) Plan 2007* covers the location of the Project site.

3.4.6.2 Relevance to the Project

The following ecological outcomes of the plan are relevant to the management of the Project site:

- For estuarine reaches, to minimise changes to brackish water habitats

- For Moreton Bay and Pumicestone Channel, to minimise changes to the natural movement and delivery of sediment, and the delivery of fresh water, natural nutrients and organic matter

Water quality monitoring and management should be undertaken in accordance with relevant guides such as BAC's *Landside Stormwater Quality Management Strategy* (BAC 2014c) and BAC's *Construction Environmental Management Plan (CEMP) Guidelines* (BAC 2014d) during construction of the Project to ensure that water discharging from the Project site does not adversely impact on the ecological outcomes for Moreton Bay.

3.5 State planning provisions

The following state planning provisions have been assessed in relation to the Project:

- ShapingSEQ
- State Planning Policy

3.5.1 ShapingSEQ

3.5.1.1 Background

ShapingSEQ is the draft statutory South East Queensland regional plan (Department of Infrastructure, Local Government and Planning 2016). ShapingSEQ allocates all land in the SEQ region into one of the following regional land use categories:

a) Regional Landscape and Rural Production Area

b) Urban Footprint

c) Rural Living Area

Brisbane Airport is mapped within the Urban Footprint. ShapingSEQ recognises the Australia TradeCoast, which includes the Port of Brisbane and Brisbane Airport, as one of the essential drivers of the SEQ region's economic growth and a significant employment generator.

3.5.1.2 Relevance to the Project

While ShapingSEQ recognises the importance of Brisbane Airport in the development of the South East Queensland region, ShapingSEQ does not regulate development activities on Brisbane Airport land.

BAC's development objectives and land use planning outcomes for Brisbane Airport, as outlined in the BAC Master Plan, are consistent with ShapingSEQ's planning outcomes. It is envisaged that the Project will enable further economic development within the Airport Central (Airport Drive West) sub precinct.

3.5.2 State Planning Policy

3.5.2.1 Background

The State Planning Policy (SPP) defines the Queensland Government's approach to matters of state interest in land use planning and development. The SPP identifies the state's interests in planning and development and how they must be dealt with in planning schemes, council development assessment processes and in designating land for infrastructure (Department of Infrastructure, Local Government and Planning 2017).

The SPP, effective 3 July 2017, identifies 17 state interests across five broad themes as follows:

- Liveable communities and housing
- Economic growth
- Environment and heritage
- Safety and resilience to hazards

- Infrastructure

The SPP applies, to the extent relevant, when:

1. Making or amending a local planning instrument
2. Making or amending a regional plan
3. Designating premises for infrastructure
4. Local government is assessing a development application, if its planning scheme has not yet appropriately integrated he relevant SPP state interest policies
5. An assessment manager or referral agency other than local government is assessing a development application.

In relation to the Project, an assessment of the Project's compliance with the state interest policies and assessment benchmarks as outlined in Part E of the SPP has been undertaken in Table 3.4.

3.5.2.2 Relevance to the Project

BAC seeks to ensure that Brisbane Airport development, where possible, is compatible with State planning provisions. An assessment of the Project's compliance with the SPP in relation to matters of State interest is provided in Table 3.4 below. The matters listed in Table 3.4 are those matters that were triggered by the SPP mapping or other Queensland Government mapping for the Project site.

Table 3.4 Compliance against relevant matters of State interest under the SPP

Matter of State Interest triggered under the SPP mapping within the Project site	Mitigation measure	Project compliance with State interest requirement
State interest – biodiversity		
1) Development is located in areas to avoid significant impacts on matters of national environmental significance and considers the requirements of the *Environment Protection and Biodiversity Conservation Act 1999.* 2) Matters of state environmental significance are identified and development is located in areas that avoid adverse impacts; where adverse impacts cannot be reasonably avoided, they are minimised. 3) Matters of local environmental significance are identified and development is located in areas that avoid adverse impacts; where adverse impacts cannot be reasonably avoided, they are minimised. 4) Ecological processes and connectivity is maintained or enhanced by avoiding fragmentation of matters of environmental significance 5) Viable koala populations in South East Queensland are protected by conserving and enhancing koala habitat extent and condition.	The SPP mapping identifies "*regulated vegetation (intersecting a watercourse)*", *"regulated vegetation",* "*Matter of State Environmental Significance (MSES) - High Ecological Significance wetlands*" and *"MSES – Wildlife habitat"* within the Project site. However, the area in which the Project is to be located is highly modified with existing and future development proposed as part of the Brisbane Airport 2014 Master Plan. Appropriate environmental mitigation measures will be implemented to reduce any potential negative impacts on the receiving environment, as discussed throughout this EAR.	Achieved

Matter of State Interest triggered under the SPP mapping within the Project site	Mitigation measure	Project compliance with State interest requirement
State interest – water quality		
The following requirements are assessment benchmarks for the development: 1) Development is located, designed, constructed and operated to avoid or minimise adverse impacts on environmental values arising from: a) altered stormwater quality and hydrology b) wastewater c) the creation or expansion of non-tidal artificial waterways d) the release and mobilisation of nutrients and sediments. 2) Development achieves the applicable stormwater management design objectives outlined in tables A and B (appendix 2) 3) Development in a water supply buffer area avoids adverse impacts on drinking water supply environmental values.	Section 7 provides an assessment of the Project in relation to the environmental values of receiving waters, in particular an assessment of the potential impacts to stormwater quality and flow. While an assessment of the Project against the SPP Code: Water Quality is not strictly necessary, the performance outcomes and acceptable outcomes of the Code provide guidance on best practice environmental management for the Project. The following guidance should be considered for the Project: ■ Planning to avoid/minimise new impacts, such as: – Preparation of stormwater quality management measures for the site that is consistent with any existing stormwater management planning for the area, and meeting appropriate design objectives – Wastewater (including septic waste and contaminated stormwater captured within spill containment bunds) is to be managed through the implementation of a waste management plan during construction (refer Section 12) ■ Construction to avoid/minimise new impacts: – Preparation of an ESCP	Achieved
	■ Operate to avoid/minimise impacts: – Development incorporates stormwater flow control measures to achieve design objectives outlined in the SPP Code, or current best practice environmental management, including management of frequent flows, peak flows, and construction phase hydrological impacts using Water Sensitive Urban Design (WSUD) treatments – Manages wastewater discharges to non-tidal artificial waterways ■ Avoids lowering groundwater levels where potential and actual ASS are present	

Matter of State Interest triggered under the SPP mapping within the Project site	Mitigation measure	Project compliance with State interest requirement
State interest – natural hazards		
Development: 1) Development avoids natural hazard areas, or where it is not possible to avoid the natural hazard area, development mitigates the risks to people and property to an acceptable or tolerable level.	The Project site is located within a mapped bushfire hazard area – "*High Potential Bushfire Intensity*". However, the Project site will be cleared of vegetation upon commencement of Project works, thereby removing the risk from bushfires. The Project site is also located in a high and medium storm tide coastal hazard area, and an erosion prone area. Appropriate mitigation measures will need to be adopted to address erosion and sediment control as described in Section 5. Flood immunity of the Project site will be achieved through protection by the higher levels of the enclosing road embankments of Moreton Drive, Nancy Bird Way and Airport Drive. To achieve 1:100 year flood immunity, the Airport Drive median would need to be raised by up to 200 mm in some areas through landscaping. These road systems combined with potential flap gates installed on a number of major culvert crossings will prevent backwater from regional flood events and storm surge/tidal events entering the Project site.	Achieved
2) Development supports and does not hinder disaster management response or recovery capacity and capabilities.	The road access network around the Project site provides efficient access to surrounding areas. The Project site will not inhibit disaster management response or recovery capacity and capabilities.	Achieved
3) Development directly, indirectly and cumulatively avoids an increase in the severity of the natural hazard and the potential for damage on the site to other properties.	Previous development on the majority of nearby lots has involved extensive clearing, thereby significantly reducing the risk of bushfire hazards. The Project site will also be cleared of vegetation and is bounded by major roads, which will act as a firebreak in the event of a bushfire.	Achieved
4) Risks to public safety and the environment from the location of hazardous materials and the release of these materials as a result of a natural hazard are avoided.	During construction, hazardous material will be contained within appropriately sized bunds in accordance with AS1940.	Achieved
5) Natural processes and the protective function of landforms and the vegetation that can mitigate risks associated with the natural hazard are maintained or enhanced.	Flap/tidal gates may be installed at the major culverts into the Project site to prevent impacts from storm or tidal surges or regional flooding. A perimeter drain will be installed in accordance with the recommended mitigation measures in this EAR.	Achieved

Matter of State Interest triggered under the SPP mapping within the Project site	Mitigation measure	Project compliance with State interest requirement
State interest – strategic airports and aviation facilities		
1) Development and associated activities do not create a permanent or temporary physical or transient intrusion into a strategic airport's operational airspace, unless the intrusion is approved in accordance with the relevant federal legislation. 2) Development and associated activities do not include light sources or reflective surfaces that could distract or confuse pilots within a light restriction zone or lighting area buffer. 3) Emissions do not significantly increase air turbulence, reduce visibility or compromise the operation of aircraft engines in a strategic airport's operational airspace. 4) Development and associated activities do not attract wildlife or increase wildlife hazards within a wildlife hazard buffer zone. 5) Development and associated activities within a building restricted area do not interfere with the function of aviation facilities. 6) Development does not increase the risk to public safety within a public safety area. 7) Development within the 20 ANEF contour or greater is appropriately located and designed to prevent adverse impacts from aircraft noise.	The Project site is within the 35 to 47.5 OLS contour. Project plant and equipment will not exceed this height and as such, an approval from the Secretary of the DIRD under the Airports Act is not required. The Project site will not adversely impact on the safety, efficiency and operational integrity of the airport and aviation facilities, as described below: ▪ As 24 hour operations may be required, lighting may be used during construction of the Project and consideration will need to be given to appropriate night lighting, in accordance with Civil Aviation Safety Authority's (CASA) *Manual of Standards Part 139 – Aerodromes (Lighting in the Vicinity of Aerodromes)* (refer Section 13). ▪ During construction, appropriate mitigation measures will be put in place to ensure emissions do not impact on air turbulence, visibility or compromise the operation of aircraft engines. ▪ Project activities are unlikely to result in safety hazards associated with wildlife, however, mitigation measures to protect wildlife are provided in Section 6.5 ▪ Project activities will not interfere with the function of aviation facilities. ▪ The Project site is not located within the airport's public safety area ▪ Project activities do not constitute a sensitive land use and are therefore not sensitive to impacts from aircraft noise	Achieved

3.6 Local government policy and planning documents

3.6.1 Brisbane City Council City Plan 2014

3.6.1.1 Background

BCC's City Plan 2014 designates Brisbane Airport as 'Special Purpose (Airport)'. BCC's Strategic Plan within the City Plan acknowledges that major industry areas have grown around the Brisbane Airport as part of the Australia TradeCoast region that supports business growth.

Under the 'Airport Precinct' of the Australia TradeCoast Neighbourhood Plan, the City Plan states that:

> *"Appropriate land use activities are identified in the Brisbane Airport Master Plan under the control of the Brisbane Airport Corporation."*

Accordingly, the BAC Master Plan guides the intended land uses on airport land, permitting a broad range of appropriate land use activities that are consistent with BAC's development objectives for the airport.

3.6.1.2 Relevance to the Project

BAC has ensured Brisbane Airport development, where possible, is compatible with local planning strategies. The Project is located within the Airport Precinct under the Australia TradeCoast Neighbourhood Plan. Land use activities in this precinct are regulated by the BAC Master Plan.

4 Land use

4.1 Introduction

This section provides an explanation of the land uses within and surrounding the Project site. It also assesses consistency with the intent of the BAC 2014 Master Plan. Consideration is given to any existing building approvals obtained since 2014 that are within close proximity to the Project site. An assessment of any potential impacts to these land uses has been undertaken and mitigation measures have been recommended.

4.2 Methodology

A review of aerial photography has identified existing land uses within the Project site. The BAC 2014 Master Plan and Building Approvals Register were also reviewed to determine what the intended uses are for the Project site.

4.3 Relevant documents

4.3.1 BAC Master Plan

A summary of the contents of the BAC 2014 Master Plan is provided in Section 3.3.2. The Project site is located within the Airport Central (Airport Drive West) sub-precinct within the 'Mixed use' zone.

It is considered that the Project is consistent with intended uses under the 'Mixed use' zoning for the Project site. The Master Plan outcomes for this zoning are to:

i) Provide for a diverse mix of uses tailored to the role and function of Brisbane Airport and its surrounding area and to enable a level of economic and social activity to serve the intended mix of visitors, workers and residents.

ii) Provide premises to accommodate firms seeking to combine their corporate office and manufacturing and distribution industry functions.

iii) Provide for a mix of industrial activities, commercial enterprises and workshops, facilitated and supported by office activities set in a business park environment.

iv) Development provides for a wide range of industry and business uses, including clean low impact industry, research and technology facilities, knowledge creation and entrepreneurial activities and service industries that are more compatible with urban areas.

v) Development results in a use that activates the Mixed Use zone at different times of the day and week to create a vital and vibrant environment.

vi) Ensure a high quality commercial environment with an intensity and form of development that is tailored to the location.

vii) Provide for development that capitalises on proximity to Australia TradeCoast and Brisbane Airport commercial environment.

viii) Development of buildings is of a height, bulk, scale and form tailored to its specific location and to the characteristics of the site.

ix) Development provides a built form that creates a consistent and cohesive streetscape and aligns with pedestrian connections and shelter.

x) Development provides consistent and cohesive landscape and streetscape treatments.

xi) Development is sensitively designed and operated to avoid or mitigate any potential adverse impact on an adjoining use.

xii) Enables interim uses within the zone prior to land being needed for development activities.

A range of intended uses for this zone are listed in the BAC 2014 Master Plan and includes hotels, outdoor sales, recreation and sport facility and showroom. Given that this Project is for the earthworks component of a test track, car dealerships, hotels and exhibition and conference activities, it is considered that the Project is consistent with the intended use of the land.

4.4 Existing environment

4.4.1 Aerial photograph review

The Project site is moderately disturbed and predominately contains casuarina plantations with some mangrove communities and grasslands. There are two main drainages lines that traverse the Project site, which are connected to Landers Pocket Drain, including one that flows from Nancy Bird Way in the north and another than flows across the Project site from Moreton Drive. There are a number of existing fire trails and tracks that run through the Project site, which will be removed during Project works.

The Project site is surrounded by a combination of airport activities, car parking, new developments and casuarina plantations, including:

- Central Parking Area (CPA), including the remote public car park (located along Nancy Bird Way and Ivy May Way)
- Brisbane Airport Services Centre (located on the corner of Moreton Drive and Nancy Bird Way)
- Kingsford Smith Memorial and the Southern Cross Aircraft (located on the corner of Airport Drive and Nancy Bird Way)
- International Terminal, including car parking and hire cars
- Airtrain (International Terminal) Station
- Warehouses and commercial tenancies (located along on Qantas Drive)

Beyond the immediate proximity of the Project site and north of the Kedron Brook is the Nudgee Golf Course, Banyo industrial and residential areas, the North Brisbane Junior Motorcycle Club, St Paul's Theological College, and the Earnshaw State College. Located to the south of the Project site are the Eagle Farm and Pinkenba industrial areas, the Pinkenba residential community and port facilities. The nearest sensitive residential receptors to the Project site include:

- Northgate State School (2.6 km west)
- Hendra State School (2.75 km south west)
- Novotel Hotel (1.8 km south west)
- Tadpoles and Joey Club Childcare Centre (2.1 km south west)
- Pullman and Ibis Hotel (1.5 km north) (under construction)

4.4.2 Current development activity

A search of BAC's Register of Building Applications (2017) identified a number of current building applications and approvals within close proximity to the Project site (refer Table 4.1).

Table 4.1 Current building applications and approvals within close proximity to the Project site (as at 9 June 2017)

Application Ref No.	Details	BAC Determination	ABC Determination
2014/032	Landers Pocket Drain Relocation	Consent Issued – 17/10/2014	Building Approval Issued – 28/10/2014, 26/11/2014
2014/045	CPA Staff Car Park Stage 3 & 4 – 8 Bert Hinkler Drive	Consent Issued – 13/07/2015	Building Approval Issued – 27/07/2015, 11/11/2015
2014/046	Banksia Place Car Park	Consent Issued – 23/10/2014	Building Approval Issued – 10/11/2014
2014/054	Hertz CPA Shade Sail – 22 Ivy May Way	Consent Issued – 27/03/2014	Building Approval Issued – 11/04/2014
2014/069	Modification of Advertising Sign 4001-06-I – Airport Drive	Consent Issued – 14/05/2014	-
2014/112	Phase 2 NPR Project	Consent Issued – 05/02/2016 03/08/2016	Building Approval Issued – 01/03/2016, 05/09/2016
2014/116	CPA Rental Overflow Facility – 7 Ivy May Way	Consent Issued – 26/06/2015	Building Approval Issued – 21/07/2015
2014/178	ITB to Service Centre Shared Path – Nancy Bird Way & Great Barrier Road	Consent Issued – 19/11/2015	Building Approval Issued – 21/01/2016
2015/046	Banksia Place Amenities Upgrade	Consent Issued – 07/05/2015	Building Approval Issued – 17/06/2015
2015/057	CPA Remote Public Car Park – Nancy Bird Way	-	-
2015/063	Airservices Onesky Project – Airport Drive, ATSC Centre	Consent Issued – 22/03/2016	Building Approval Issued – 31/03/2016, 01/05/2016
2015/101	Fitout for Repco at Building 212 – 51-57 Qantas Drive	Consent Issued – 08/09/2015	Building Approval Issued – 08/09/2015
2015/137	Installation of Pylon Sign for KFC – Corner of Moreton Drive and Nancy Bird Way	Consent Issued – 06/10/2015	Building Approval Issued – 13/11/2015
2015/188	CPA Fibre Link – South West Corner of Moreton Drive and Nancy Bird Way	Consent Issued – 16/02/2016	Building Approval Issued – 08/03/2016
2016/016	Direct Couriers – 20-24 Qantas Drive	Consent Issued – 27/06/2016	Building Approval Issued – 15/08/2016
2016/021	Department of Agriculture and Water Resources Stage 2 Alterations – 42-44 Qantas Drive	Consent Issued – 26/05/2016	Building Approval Issued – 03/06/2016
2016/044	Department of Agriculture and Water Resources Stage 3 Alterations – 42-44 Qantas Drive	Consent Issued – 05/09/2016	Building Approval Issued – 05/09/2016
2016/068	Brisbane Control Tower Complex Life Extension Project	Consent Issued – 20/10/2016	Building Approval Issued – 08/11/2016
2016/088	Sandvik Fire Panel Replacement – 60-62 Qantas Drive	Consent Issued – 07/09/2016	Building Approval Issued – 22/09/2016
2016/150	Fit Out of Australian Federal Police – Qantas Drive	Consent Issued – 22/11/2016	Building Approval Issued – 13/12/2016
2017/008	FedEx Building Hardstand Extension – Qantas Drive	Consent Issued – 31/01/2017	Building Approval Issued – 24/02/2017

Source: BAC 2017

4.4.3 Current services

A number of existing services are located within the Project site. An underground Energex high voltage cable runs through the site from Airport Drive to Moreton Drive and a substation is present in the southern portion of the Project site. An underground high voltage cable also runs across the north corner of the Project site from the Service Centre on Nancy Bird Way to the CPA.

An underground gas pipe also runs across the north western boundary of the Project site.

Drainage lines also run across the Project site connecting two culverts underneath Nancy Bird Way, one culvert underneath the southern section of Airport Drive, and two culverts underneath Moreton Drive.

4.5 Potential impacts

Given the existing condition of the Project site, site preparation works will be required prior to the commencement of construction, including vegetation clearing, ground improvement works, filling, crushing, surcharging and realignment of the drainage channels. As such, there is the potential for the Project to cause minor impacts to the surrounding land uses.

The Kingsford Smith Memorial, which houses the Southern Cross Aircraft, is located approximately 95 m from the north eastern corner of the Project site and is a publically accessible heritage place listed on the Brisbane Airport Heritage Register.

Potential dust and noise emissions may occur during construction of the Project. Assessment and mitigation of dust and noise issues is discussed in Sections 8 and 9 respectively.

During construction, the Project may impact on the existing municipal services located within the Project site, particularly the underground Energex high voltage cable. Once confirmation of the type, depth and location of these services is confirmed, any potential impacts will be managed during the Project design.

The construction of the Project will not result in significant impacts to traffic circulation in the surrounding area, although temporary disruption may occur for short periods (refer Section 13). Minor impacts to accesses of surrounding properties and tenancies may be experienced.

Overall it is considered that there would be minimal impacts to surrounding land uses, however, any ecological and social impacts will be managed in accordance with the mitigation measures outlined in Sections 6.5 and 10.6, respectively.

4.6 Mitigation measures

Table 4.2 recommends management measures to mitigate the potential impacts identified above.

Table 4.2 Land use potential impacts and mitigation measures

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Access restrictions and impacts to traffic circulation during construction the Project	Minimise impacts to adjacent tenancies and airport users access during construction	■ Undertake consultation with adjacent tenancies to notify them of the Project ■ Implement the traffic management measures as recommended in Section 13.6	Pre-construction/ construction	Requirement to be included in the EMP
Disturbance to Energex and BAC services	Undertake consultation with service providers to determine appropriate relocation procedures	■ Energex and BAC services will need to be protected in consultation with Energex and asset managers in BAC to determine the need for any consent and access arrangements	Detailed design/ pre-construction	BAC to address
Dust, noise and vibration impacts to adjacent land uses	Minimise dust and noise impacts to adjacent tenancies and residents through the implementation of dust and noise monitoring programs	■ Implement dust, noise and vibration monitoring programs and mitigation measures as outlined in Sections 8.7 and 9.6 respectively	Detailed design/ construction	Requirement to be included in the EMP

5 Geology, soils, topography and contaminated land

5.1 Introduction

This section outlines the issues relating to geology, soils, topography and land contamination associated with the Project and discusses appropriate mitigation measures to be undertaken during the construction phase.

5.2 Methodology

A desktop review of the background information, mapping, databases and existing reports has been undertaken, as well as a review of relevant legislation and guidelines, to identify the existing conditions within the Project site.

Aurecon has undertaken a review of reports detailing the topography, geology, soils and site history within the Project site. In particular, Golders (2016a; b) have undertaken a contamination assessment of soil and groundwater, including a risk assessment for per- and poly- fluoroalkyl substances (PFAS), in addition to an acid sulfate soil (ASS) assessment (Golders 2016c; d). Findings from these reports have been incorporated into the EAR with the full investigations provided in Appendices D and E respectively. Golders have prepared an ASS Management Plan for the Project which is provided in Appendix F.

PSK Environmental prepared an Asbestos Containing Materials (ACM) Management Plan to be implemented should any ACM be identified on the surface or in the soil recovered during clearing and excavation works. The ACM Management Plan has been provided in Appendix G.

Potential impacts were able to be identified based on a review of this information, and mitigation measures to address these potential impacts have been recommended.

5.3 Relevant documents

5.3.1 Airports (Environment Protection) Regulations 1997

Schedule 3 of the AEPR outlines accepted limits for soil pollution. Baseline data collected as per the Golder Contamination Assessment, and Acid Sulfate Soil Assessment Reports for the Auto Mall project, in addition to NEPM procedures, are to be incorporated as part of the project assessment framework.

5.3.2 National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amendment 1, 2013)

Schedule B1 of *National Environment Protection (Assessment of Site Contamination) Measure 1999* (Amendment 1, 2013) (NEPM 2013) provides a framework for the use of investigation and screening levels. The framework is based on a matrix of human health and ecological soil and groundwater investigation and screening levels and guidance for specific contaminants. These measures are more up to date criteria than the AEPR soil pollution limits and as a consequence should be adopted where relevant and approved by the AEO.

5.3.3 Health Based Guidance Values for PFAS for Use in Site Investigations in Australia

In April 2017, the Department of Health released final health based guidance values (HBGVs) for PFAS in drinking water and recreational water based on a tolerable daily intake produced by Food Standards Australia and New Zealand.

5.3.4 CRC Care Assessment management and remediation for PFOS and PFOA

The Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care) (2017) released Technical Report No. 38, which provides screening levels for PFAS in soil and water for the protection of human health and the environment.

CRC Care (2017) has derived health screening levels (HSLs) for PFAS in soil for low density residential (HSL (A)), high-density residential (HSL (B)), open space/recreational (HSL (C)) and commercial/industrial (HSL (D)). The Project site is considered to be commercial/industrial and as such, HSL (D) will apply.

For PFAS in marine water, the 95% species protection value for slightly to moderately disturbed marine systems will be adopted.

5.3.5 Managing PFC Contamination at Airports – Interim Contamination Management Strategy and Decision Framework (GHD 2015)

GHD prepared the guideline *Managing PFC Contamination at Airports – Interim Contamination Management Strategy and Decision Framework* for Airservices Australia and DIRD for the management of PFAS on Airport Land.

This guideline provides interim screening levels (ISLs) in soil, groundwater and surface water for the protection of human health and the environment.

5.4 Existing environment

This section provides an overview of the existing condition of the Project site in regards to topography and erosion potential, geology and soil landscape, ASS and contaminated land.

5.4.1 Geology and soils assessment

5.4.1.1 Topography

As reported in Golders (2016a; b), the Project site is typically flat and low-lying with a surface elevation of approximately 2.4 m AD. The Project site is heavily dominated by planted casuarina forest and mangroves. Man-made drainage channels cross the southern and northern portions of the site. Low lying areas are present in multiple areas across the site, accumulating water during periods of high rainfall, and also potentially during high tide events. Landers Pocket Drain is the closet major surface water body feature, located approximately 100 m west of the Project site (across Moreton Drive). Surface water in Landers Pocket Drain flows into the Kedron Brook Floodway Drain. The ultimate receiving environment of surface water is Moreton Bay. Further detail on the site hydrology is provided in Section 7.

5.4.1.2 Geology and soil landscape

5.4.1.2.1 Desktop assessment

A summary of the geology and soils of the Project site has been provided based upon a review of existing mapping information and the ASS investigations undertaken by Golders (2016c; d). *The Soil Landscapes of Brisbane and South-Eastern Environs, Queensland* (CSIRO 1987) indicates that the Project site is situated within an alluvial landscape likely to feature the *Woongoolba* landscape comprising:

- Dominant Soil Group – humic gleys, peaty gleys and solonchaks

- Landscape and Parent Geology – low (coastal) plains of alluvium and narrow depressions

These soil profiles are young alluvium that frequently contains moderate to high concentrations of pyritic material and fine organic matter. This soil unit is generally associated with ASS.

The Brisbane Queensland Geological Series Map (Department of Mines, Sheet 9543, 1986, scale: 1:100,000) indicates that the Project site is located on alluvial deposits of Holocene age.

A search of the Australian Soils Resource Information System (ASRIS) online mapping (CSIRO 2017) on 15 March 2017 indicates that the Project site has an Anthroposol soil profile which comprises sand, loamy sand or clayey sand horizon (<10%) underlain by a light to light medium clay horizon (35-45%) with a surface and subsurface pH level of approximately 3.0 to 4.8.

5.4.1.2.2 Results from fieldwork

Soil profiles encountered by Golders (2016c; 2016d; 2016e) during their investigations comprised:

- Crust (Topsoil) – A desiccated layer generally comprising loose silty sand and sandy clay generally between 0.1 to 0.3 m bgl
- Recent Alluvium (Holocene) – Compressible, inter-bedded sandy clays and clayey sands (Upper Holocene) from approximately 0.0 to 9.0 m bgl
- Younger Alluvium (Holocene) – Highly compressible, inter-bedded sandy clays and clayey sands (Upper Holocene) and silty clays (Lower Holocene) extending to depths up to 30 m bgl in some areas
- Older Alluvium (Pleistocene) – Stiff to very stiff clays, medium dense sands, and firm to hard clayey silt up to a depth of 30 m bgl.
- Bedrock – Fine to medium grained with low to medium strength (either basalt or sandstone).

These findings are consistent with the literature detailed in Section 5.4.1.2.1.

5.4.2 Site history

5.4.2.1 Site history findings

A historical title search confirms that the Commonwealth of Australia has owned the Project site since 1994.

Contaminated sites on Brisbane Airport land are listed on a Contaminated Sites Register (CSR) which BAC maintains. Upon review of the AES (BAC 2014a), one site was listed on the CSR as occurring within the Project site (Site 28). Two additional sites (Sites 36 and 47), which are thought to have contained commercial service stations, were located within close proximity to the Project site but are not likely to impact the proposed works.

Site 28 is located within the Project site and is listed as low risk according to the Brisbane Airport CSR. Golders (2016a; 2016b) identified Site 28 as black sands, which is '*located at the southern end of the Auto Mall Precinct within the Stage 2 investigation area, on the boundary with the Stage 1 investigation area*'. Potential contaminants of concern associated with the black sands include heavy metals, minerals and radioactivity (Golders 2016b).

No additional sites listed on the CSR are located within the Project site.

During the construction of the Brisbane Airport precinct, mineral sands may have been placed on the Project site. The mineral sands were likely to be sourced from the mining activities on North Stradbroke Island where rutile, zircon and ilmenite are mined. These minerals contain titanium and zirconium metals as well as associated naturally occurring radioactive materials (Golders 2016a).

A review of historical aerial photographs indicates that the Project site itself has also been used for agricultural purposes from 1946 (the earliest historical aerial photograph available) until the early 1980s.

Filling of the Project site occurred in the 1980s with the fill material likely to have been excess sand sourced from Moreton Bay or North Stradbroke Island for the development of Brisbane Airport (Erskine 1990). In 1983, during filling of the Project site, surface water drains were also installed.

The historical aerial photographs also indicate the following:

- 1987 – Kingsford Smith Memorial erected at the intersection of Nancy Bird Way and Airport Drive
- 2007 – Energex substation constructed within the Project site
- 2009 – Southern portion of the Project site used as an asphalt batching plant and for stockpiling for the Moreton Drive construction

5.4.3 Acid sulfate soils assessment

5.4.3.1 Findings

This section provides a summary of the findings from the ASS investigations undertaken by Golders (2016c; 2016d). For the ASS investigations, the site was divided into stages; Stage 1 (north of the Energex cable) and Stage 2 (south of the Energex cable). Sampling locations are provided in Figure 5.1.

The Department of Natural Resources and Mines, 1:100,000 scale Map 1 "Acid Sulfate Soils – Tweed Heads to Redcliffe" indicates that the site is situated in an area mapped as:

> *"Acid Sulfate on Disturbed Land - disturbed land (eg canal estates, marinas, aquaculture, quarry, urban, and industrial likely to contain ASS In some cases partial or full treatment may have been undertaken). Limited field investigation."*

A search of the ASRIS online mapping (CSIRO 2017) on 14 March 2017 indicates that the Project site is classed as A2, which is a high probability of ASS occurring with moderate confidence.

Based on previous ASS investigations undertaken by Golders (2016c; d), medium to high levels of actual acid sulfate soil (AASS) and potential acid sulfate soil (PASS) occur within the proposed Project site.

The Stage 1 ASS investigation determined that AASS materials are present from the ground surface to depths approximately 0.8 m AD and 1.2 m AD and deeper in isolated pockets where previous localised ground disturbances may have occurred (Golders 2016c). AASS was detected in materials below the water table which indicated that the groundwater table had been historically lower in this area (Golders 2016c). Calculated liming rates to neutralise net acidity in the identified AASS materials range from about 5 kg/m^3 to 30 kg/m^3. PASS materials underlie the AASS materials across the Stage 1 site, however net acidity varies considerably. Calculated liming rates to neutralise net acidity in the identified PASS materials include:

- 15 kg/m^3 to 60 kg/m^3 (northern and southern ends of Stage 1 area)
- 90 kg/m^3 to 150 kg/m^3 and up to 320 kg/m^3 (centre of the Stage 1 area)

The Stage 2 ASS investigation by Golders (2016d) indicated that AASS materials are present from the ground surface to depths of approximately -0.13 m AD. AASS has been detected in materials below the water table which indicates that the groundwater table has been historically lower (Golders 2016d). Calculated liming rates to neutralise existing acidity in the identified AASS materials range from about 3 kg/m^3 to 13 kg/m^3. PASS materials are present from approximately 3.33 m AD to -0.33 m AD and throughout the majority of the sampling locations. Calculated liming rates to neutralise net acidity in the identified PASS materials includes:

- 3.0 kg/m^3 to 14.2 kg/m^3 (southwestern quadrant of the Stage 2 area)
- 12.9 kg/m^3 (centre of the Stage 2 area)
- Up to 284 kg/m^3 (north western boundary of Stage 2 area)

Groundwater samples collected from the Project site suggest a variable or historically disturbed environment. At the northern end of the Stage 1 area, the groundwater had adequate buffering capacity to maintain an acceptable pH level in the presence of minor acid generation. However, groundwater samples from the remainder of the Stage 1 area and across the Stage 2 area indicated a buffering capacity inadequate to maintain stable, acceptable pH level in areas vulnerable to acidification.

Full copies of the investigations are provided in Appendix D.

5.4.3.2 Relevance to the Project

Medium to high levels of AASS and PASS occur within the Project site and as such, an ASS Management Plan has been prepared for the Project, which incorporates a number of measures to mitigate and control potential impacts relating to the disturbance of ASS and groundwater during earthworks (refer Appendix F).

5.4.4 Contaminated land assessment

5.4.4.1 General contaminants

5.4.4.1.1 General

Golder (2016a; b) conducted a contamination assessment of the soil and groundwater within the Project site from December 2015 to October 2016. For the contaminated land investigations, the site was divided into stages; Stage 1 (north of the Energex cable) and Stage 2 (south of the Energex cable). Findings are summarised below.

Golders (2016a; b) identified a known contaminated site (Site 28 – black sands) which is '*located at the southern end of the Auto Mall Precinct within the Stage 2 investigation area, on the boundary with the Stage 1 investigation area*'. Potential contaminants of concern associated with the black sands include heavy metals, minerals and radioactivity (Golders 2016b). No additional CSR listed sites were identified within the Project site.

Golders (2016a; b) identified an asphalt batching plant in the southern portion of the Project site (utilised in 2009), which was associated with the construction of Moreton Drive. This potential contamination source includes potential contaminants of concern including polycyclic aromatic hydrocarbons, phenols and total recoverable hydrocarbons (Golders 2016a; b).

Full copies of the investigations are provided in Appendix E.

5.4.4.1.2 Soils

No exceedances of the AEPR guidelines were detected for heavy metals. Exceedances were detected above the NEPM 2013 environmental investigation levels (EILs) for nickel and zinc in four shallow soil samples collected from the western and eastern portions of the Project site. However, the 95% Upper Confidence Limit (UCL) for nickel and zinc in the soil is below the EILs (Golders 2016b). Titanium concentrations are present in the eastern portion, potentially relating to the historical placement of mineral sands (Golders 2016b).

Results from the subsurface boreholes found layers of material possibly associated with mineral sand deposition at five borehole locations, generally between 0.0-0.1 m bgl, with one layer being detected between 0.5-0.6 m bgl and another being detected at 1.75-2.0 m bgl. These samples were tested for the presence of naturally occurring radioactive materials using a Thermo Scientific *Radeye*™ radioactivity meter. No levels were reported higher than the background radiation levels for these samples, nor during a site walk over measuring radioactivity levels at ground level.

5.4.4.1.3 Groundwater

Five groundwater wells were sampled and analysed for filtered metals and metalloids in October 2016 (Golders 2016a; b). Concentrations of nickel and zinc above the AEPR Marine Water guidelines and NEPM 2013 Marine Water groundwater investigation levels (GILs) were detected in all samples collected.

5.4.4.1.4 Relevance to the Project

Despite minor elevated metal and metalloid concentrations detected, Golders (2016a; b) concluded that a Contamination Management Plan for the two areas of the Project site (Stage 1 and Stage 2) is not required.

5.4.4.2 PFAS

5.4.4.2.1 Findings

It is understood that PFAS are present in the groundwater across Brisbane Airport. No known or potential PFAS contaminating activities were identified within or in the vicinity of the Project site. Known PFAS source areas at Brisbane Airport include the fire rescue training facilities and fire stations. Golders (2016a; b) have identified the nearest potential sources of PFAS to be:

- Satellite Fire Station, located approximately 3.9 km north of the Project site
- Fire Rescue Training Area, located approximately 4.8 km north of the Project site
- Main Fire Station, located approximately 2.3 km north east of the Project site
- JUHI facility along Hakea Street, located approximately 780 m north-east of the Project site
- Former JUHI facility along Lomandra Drive, located approximately 1.3 km south of the Project site

Golders (2016a; b) conducted an assessment of potential impacts and risks relating to soils, groundwater and potential off site migration of groundwater impacted with PFAS within the Project site during December 2015, with supplementary investigations completed during October 2016. Sampling locations targeted areas with potential contamination (ie locations with historical use of firefighting foams and at the CSR site).

Results from the soil sampling were analysed for PFAS. Concentrations of perfluorooctanesulfonic acid (PFOS) and/or perfluorohexanesulfonic acid (PFHxS) were present within the soil at four locations and were below the ISLs (GHD 2015) and HSL (D) (CRC Care 2017).

Results from the groundwater assessment also detected PFAS concentrations above the laboratory limit of reporting in the majority of samples but below the HBGV for drinking water (0.07 µg/L) in all instances except AM-MW14 and AM-MW16 in October 2016. All groundwater samples are below the HBGV for recreational water (0.7 µg/L).

Concentrations of PFAS were detected above the laboratory limit of reporting at the groundwater monitoring wells detailed in Table 5.1 and Figure 5.2.

Table 5.1 Groundwater concentrations of PFHxS and PFOS above the laboratory limit of reporting

Monitoring well	Concentration of PFHxS and PFOS (µg/L)
AM-BH08	0.004 (January 2016) 0.015 (October 2016)
AM-BH19	0.007 (January 2016) 0.007 (October 2016)
BIP/MW1	0.006 (January 2016) 0.019 (October 2016)
BIP/MW2	0.002 (January 2016) 0.002 (October 2016)
AM-MW10	0.066 (October 2016)
AM-MW14	0.405 (October 2016)
AM-MW15	0.054 (October 2016)
AM-MW16	0.314 (October 2016)

All groundwater samples had concentrations of PFOS exceeding the surface water ISL for human consumption of fish/aquatic species (0.65 ng/L) under the *Managing PFC Contamination at Airports – Interim Contamination Management Strategy and Decision Framework* (GHD 2015). However, it is

noted that this ISL is three times lower than the laboratory limit of reporting, using laboratory ultratrace methods, and therefore even non-detects will exceed this ISL.

Full copies of the investigations are provided in Appendix E.

5.4.4.2.2 Relevance to the Project

Despite minor elevated PFAS concentrations detected in the soil and groundwater, the risk to aquatic ecosystems and human health is considered low and Golders (2016a; b) concluded that a Contamination Management Plan for the two areas of the Project site (Stage 1 and Stage 2) is not required.

5.5 Potential impacts

5.5.1 Geology and soils impacts

During construction, existing soils and vegetation will be disturbed and there is potential for erosion and sedimentation to occur due to stockpiling and removal of vegetation if suitable control measures are not implemented. There is also the potential for erosion and sedimentation to occur due to crushing, screening and stockpiling of materials if suitable control measures are not implemented.

The Project site may also be susceptible to minor soil contamination during construction in instances where hydrocarbon or chemical leaks and small scale spills from construction vehicles and machinery occur.

5.5.2 Acid sulfate soils impacts

Golders (2016c; d) provided a summary of potential impacts that could occur as a result of ASS within the Project site:

- Any site excavations will disturb ASS and will require management measures including lime treatment of excavated spoil. Excavation of the proposed perimeter drains to RL 0.2 m AD will result in AASS spoil and oxidation of PASS, which may require separate management measures.
- Filling and surcharging/preloading of the site will result in further AASS being “pushed” below the water table. Surcharging/preloading will also cause a slight mounding of the local water table, resulting in the temporary saturation of AASS. These will result in the release of acid to the groundwater and the subsequent stripping and mobilisation of metals. Groundwater impacted by acidity and metals may discharge to the surface and/or shallow drains immediately surrounding the Project site, but cannot discharge into Landers Pocket Drain as the site is bunded from external drains.

5.5.3 Contaminated land impacts

There is the potential for ground disturbance associated with the construction of the Project to disturb and/or mobilise contamination in soil and groundwater. Aquatic ecosystems and persons who consume fish or other aquatic species downstream from where groundwater discharges into the receiving environment may be impacted from groundwater contamination.

In addition, if contaminated soils and groundwater are encountered during Project works, there is the potential for construction contractors to be exposed to contamination.

Based on Golders (2016a; b) investigations, concentrations of PFAS and metal/metalloids (nickel and zinc) were detected in the groundwater at the Project site. However, these contaminant concentrations are considered to be low and as such, the qualitative risk to human and aquatic ecosystem receptors is a low risk and can be mitigated through implementation of the measures outlined in Section 5.6.

5.6 Mitigation measures

A range of mitigation measures have been recommended to address the potential impacts listed in Section 5.5 to geology, soils, topography and contamination are provided in Table 5.2 below.

An ASS Management Plan and an ACM Management have been prepared and are provided in Appendices F and G respectively.

Table 5.2 Soils, topography, geology and contaminated land potential impacts and mitigation measures

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Soil erosion and soil stability				
Soil erosion and sedimentation of exposed soils Importation of fill may result in erosion and sedimentation	Implement an Erosion and Sediment Control Plan during construction	■ Develop and implement an ESCP in accordance with relevant standards and guidelines, following these general requirements: – All erosion and sediment control measures shall be constructed and maintained as per International Erosion Control Association (IECA) (2008) standard drawings – All erosion and sediment control devices shall remain in place until site stabilisation has been achieved, as directed by the BAC Environmental Advisor – Any potentially sediment-laden stormwater runoff shall pass through a sediment control device prior to discharging from the Project site – All materials received for crushing at the Project site must be stockpiled and crushed within the Project site with erosion and sediment control in place, in consultation with the BAC Environmental Advisor ■ The ESCP is to be prepared by a suitably qualified and experienced professional in accordance with the requirements of the IECA Guidelines (2008) (eg a Certified Professional in Erosion and Sediment Control (CPESC) or a Registered Professional Engineer of Queensland (RPEQ) with at least two years' experience in the management of erosion and sediment control that can be verified by an independent third party)	Detailed design/ construction	Requirement to be included in the EMP
Soil erosion and sediment entering watercourses after vegetation removal and/or during bulk earthworks	Adopt erosion controls to minimise the erosion potential of the Project site	■ For any completed earthworks or disturbed areas where construction is likely to be suspended, cover requirements are to be determined in consultation with the BAC Environmental Advisor and be in accordance with the IECA Guidelines (2008). The types of cover considered should include hydromulch, soil stabilising polymers, grasses, erosion control blankets etc. ■ A perimeter drain to be installed on site for collection of runoff for treatment prior to discharge or for use as a dust suppressant during construction where necessary ■ Staged land disturbance is to be completed where possible and include progressive stabilisation to minimise the duration of exposed soils	During construction	Requirement to be included the EMP

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Sediment being tracked onto paved areas	Avoid tracking sediment onto paved road areas	■ Prior to leaving site, all construction plant in contact with site flora are to be inspected and cleaned as necessary to prevent the transport of fire ants, weeds and seeds ■ All vehicles leaving the site will exit via the following sediment control measures: – Primary treatment across rock surfaced roadways of nominally 120 m for trucks and plant and a minimum 50 m for light vehicles – All vehicles will traverse a minimum of three rumble/ shaker grids (approximately 7.5 m in length). All vehicles will then traverse over a two part (7 m plus 13 m) mass concrete driveway separated by rock – As a final tertiary measure, all vehicles will travel north on Airport Drive on an existing asphalt pavement (one lane of Airport Drive, which form part of the Project site) for a minimum of 340 m allowing "within site" control of sediment	During construction	Requirement to be included the EMP

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Inadequate maintenance of ESC measures	Adopt proven maintenance principles across the Project site	■ The following maintenance principles should be adopted on site: – Maintenance of erosion and sediment control measures should continue until the Project site has been suitably stabilised and further disturbance of soil by erosion is prevented – Sufficient stockpiles of mulch, geotextile and/or other materials required for erosion and sediment control must be maintained on site to enable ongoing erosion control – Uncontaminated sediment removed from erosion and sediment control devices may be stockpiled and reused in landscaping or other fill projects, otherwise must be disposed of in an approved environmentally safe manner – Maintenance must be undertaken in accordance with requirements of IECA (2008) including standard drawings ■ Review the erosion and sediment control measures for effectiveness and check maintenance records ■ Ensure all external drains are bunded from the Project site prior to undertaking earthworks within 50 m of inlets ■ Consider the use of bunds and containment areas to be adopted as corrective actions in the event of a non-conformance ■ The Construction Contractor is required to notify the site Superintendent immediately of any incidents with the potential to impact on water quality ■ An incident/accident report form is to be filled out if any non-conformances are found	During construction	Details to be provided in the detailed ESCP

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Disturbance of ASS due to excavation and filling areas				
Adverse impacts arising from disturbance and treatment of ASS (fill and natural) on site	Avoid adverse impacts on the local receiving waters due to the placement of fill material	■ Comply with the requirements of the ASS Management Plan, including: – Staged construction of a lime cut-off trench along the western, southern and eastern boundaries of the Project site prior to commencement of filling/surcharging, within 50 m of the end of the installed trench until fully completed (northern boundary already contains suitable buffering capacity) – Placement of a 10 m wide strip of surface lime 'guard layer' under the perimeter of each surcharge area prior to placement of the drainage blanket, where wick drains are installed, to neutralise any seepage resulting from wick drains – Excavated ASS materials to be managed by stockpiling within nominated section of fill/surcharge platform and neutralising by lime treatment – Progressive construction of the perimeter drain in staged sections to monitor and treat groundwater discharges – Incorporation of lime into the walls and base of the perimeter drain to neutralise discharges to groundwater (higher lime application rates along the western site boundary to buffer acidic groundwater) – Isolation of drains from external discharge ■ During periods of earthworks, a weekly inspection will be undertaken by the BAC Environmental Advisor with the AEO invited to attend. Following completion of earthworks, inspections will be reduced in frequency, in consultation with the AEO	Detailed design/ construction	Review and comply with ASS Management Plan during detailed design and construction
Disturbance of contaminated land				
Unexpected finds of contaminated soil during earthworks	Minimise exposure to potentially contaminated soil and manage unexpected finds of contaminated soil	■ Immediately cease works in the event that odours, staining or any other signs of contamination are observed ■ Commission a suitably qualified person to investigate potential contamination and provide recommended management measures	Detailed design / construction	Requirement to be included in the EMP

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Ground disturbance has the potential to disturb and/or mobilise contamination in soil and groundwater	Minimise soil disturbance in contaminated areas	■ Comply with the following: – For any existing material that requires removal from Airport land, testing of the excavated material should be undertaken in accordance with the legislative requirements for landfill disposal. The material could be tested immediately prior to excavating, or could be excavated and placed in a suitably bunded area for testing. – For any potentially contaminated material to be taken off Airport land, appropriate approvals and a Soil Disposal Permit should be obtained under the EP Act. – Implement the ACM Management Plan for the Project – For unexpected contamination finds such as odours, staining or other signs of contamination which are encountered during construction activities (eg if any deep excavations are required below the level of the clean imported fill), a suitably qualified consultant should be commissioned to assess the potential impact and recommend additional management strategies if required. ■ Details on the proposed groundwater monitoring for potential contamination issues are outlined in Section 7.6	Construction	Review and comply with recommendations during construction
Ground disturbance has the potential to disturb and/or mobilise contamination at CSR Site 28 (Black sands)	Minimise soil disturbance at CSR Site 28	■ Should potential contaminated materials (black sands) be observed during excavation within the CSR Site 28, material is to be stockpiled and the BAC Environmental Advisor is to be consulted for approval of investigation and management measures (in consultation with the AEO) ■ These soils are to be stockpiled separately from other excavated soils or imported fill and are not to be placed in direct contact with the ground ■ All personnel involved in identifying and handling contaminated material are to be appropriately trained and possess/use appropriate PPE as required ■ During surcharging activities at CSR Site 28, groundwater monitoring is to be conducted on a monthly basis with groundwater samples analysed for metals/metalloids (including titanium) (refer Section 7.6 for further information regarding groundwater monitoring)	Construction	Review and comply with recommendations during construction

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Waste soils				
Storage and disposal of waste soil material including soil placement may result in sediment runoff and/or degradation of waterways	Minimise construction wastes and prevent impacts	■ Design material stockpile areas and diversion drains to ensure protection from erosion and mobilisation of sediment resulting from runoff ■ Locate material stockpile areas away from drainage pathways and waterways (with appropriate erosion and sediment control devices installed) ■ Provide adequate disposal facilities for all types of construction wastes (refer Section 12 for further information), noting that the Project site will be isolated from external waterways during earthworks construction.	Detailed design/ construction	Requirement to be included in the EMP
Soil, surface water and groundwater contamination				
Establishment and operation of construction sites may result in contamination of site soils, surface water and groundwater	Minimise on site sources of soil and water contamination	■ Design to locate construction carpark, laydown areas and construction site compounds away from drainage pathways and waterways ■ Drainage channels/storage basins constructed to prevent the escape of potential contaminants to groundwater ■ Identify “no go” zones and restricted access and haul routes ■ Manage waste spills on site to prevent soil contamination with the use of spill kits and user training ■ Store materials and hazardous substances in accordance with AS1940-2004: The storage and handling of flammable and combustible liquids ■ All waste generated on site is to be appropriately handled and disposed (refer Section 12)	Detailed design/ construction	To be addressed during detailed design by BAC and requirements to be included in the EMP.

6 Ecology

6.1 Introduction

This section assesses the potential impacts of the Project upon flora and fauna. Suitable management and mitigation measures are proposed, where necessary.

As discussed in Section 3.1, the Project site is located on Commonwealth owned Airport land, therefore State Government legislation is not strictly applicable. Notwithstanding, this section addresses legislative requirements of both Commonwealth and State Governments, where applicable, for the benefit of decision-makers wishing to show due consideration to both State and Commonwealth ecological matters.

6.2 Methodology

The following tasks were undertaken to assess the ecological value of the Project site.

6.2.1 Desktop review

Relevant environmental databases and maps were reviewed to identify potential ecological constraints as well as significant flora and fauna species that may occur within the Project site. The following databases, maps and documents were reviewed:

- Aerial photographic images
- EPBC Protected Matters Database (3 km search-radius around the Project site) provided by DoEE (March 2017) (refer Appendix C)
- Wildlife Online (3 km search-radius around the Project site) provided by EHP (2017a) (refer Appendix C)
- Regional Ecosystem (RE) mapping provided by EHP (2017b)
- Regrowth Vegetation mapping provided by EHP (2017c)
- Essential Habitat mapping provided by EHP (2017d)
- Protected Plants Flora Survey Trigger mapping provided by EHP (2016a)
- The National Red Imported Fire Ant Eradication Program: Fire and biosecurity zones mapping provided by the Department of Agriculture and Fisheries (DAF) (March 2017) (DAF 2016b)
- Brisbane Airport Fauna Study (Lambert & Rehbein 2004)
- Chapter B5, New Parallel Runway Environmental Impact Statement (EIS)/MDP (BAC 2006)

6.2.2 Field survey

6.2.2.1 General

A fauna and flora assessment within the Project site was undertaken by a qualified senior ecologist and an environmental scientist on 6 March 2017, as indicated in Table 6.1.

Table 6.1 Suitably qualified personnel

Name	Qualification	Experience
Dr Chris Schell (Senior Ecologist)	PhD Bachelor of Applied Science (Honours)	15 years
Georgina Kerr (Environmental Scientist)	Bachelor of Science (Environment) (Honours)	6 years

6.2.2.2 Flora

The flora assessment within the Project site included the following activities:

- Verify the extent, floristic structure and composition of vegetation communities
- Verify the mapping and classification of REs and Regrowth Vegetation
- Search for conservation significant plant species
- Identify the ecological values associated with the vegetation of the Project site

Given that the Project site is located outside of a "high risk area" as indicated on the Protected Plant Flora Survey Trigger Mapping (EHP 2016a), flora survey techniques as identified in the *Flora Survey Guidelines – Protected Pants Nature Conservation Act 1992* (EHP 2016b) were not required. However, to assess the diversity of flora species located within the Project site, random meander sampling (prescribed by Cropper 1993) was undertaken, listing all vascular flora species encountered. This included areas of disturbance and areas considered to support the highest habitat values. A broader sweep of individual communities was also undertaken to identify any significant flora species, and further refine community definitions.

The flora survey was conducted continuously during field investigations, to provide an incidental list of flora species present. Plant identifications were carried out utilising available flora and botanical reference material, where necessary.

6.2.2.3 Fauna

The fauna survey undertaken within the Project site included the following:

- Targeted searches for conservation significant fauna species and associated critical habitats (ie Wallum Froglet (*Crinia tinnula*)
- Incidental records of fauna species encountered

The random meander survey technique was adopted for all identified habitat types. Fauna species observed within or flying over the Project site during the fauna survey were identified to species level, where possible.

Fauna species within the Project site were identified through direct observation and/or vocal calls.

6.2.2.4 Habitat

Habitats within the Project site were assessed to determine their value for native flora and fauna species. The assessment focussed on identifying habitat features associated with conservation significant species. Particular attention was paid to habitat features including:

- Mangrove and tidal habitats
- The presence of mature trees with hollows
- Fissures and/or other suitable roosting/nesting places
- Areas of dense vegetation and leaf litter
- The presence of Koala (*Phascolarctos cinereus*) food trees
- Areas of dense vegetation and leaf litter
- Presence of hollow logs/debris

- Presence of fruiting/blooming flora species
- Vegetation connectivity and proximity to neighbouring areas of intact vegetation

6.2.2.5 Survey limitations

It should be noted that the detectability of plants and the ability to accurately identify plants to species level may vary greatly with the time of year, prevailing climate conditions, and the presence of reproductive material (flowers, fruit, seed capsules). However, every reasonable effort has been made to detect and accurately identify all such species.

Fauna surveys are also subject to inherent limitations in the detection success of target species. These limitations often result in a degree of false-absence records (a species is present, but not detected). It is therefore important that the fauna survey limitations are identified, and the fauna survey results are viewed with these constraints in mind. The limitations to the fauna surveys conducted include:

- The survey period not coinciding with the period that some migratory or nomadic species occur in the locality
- Species with a large home range (eg owls, raptors etc) not present at the time of survey
- The difficulty in detecting certain species during the survey period (ie cryptic species, species present within the survey location at very low densities etc)
- Biological features such as sex, age-class, and breeding biology that may influence habitat use and detectability during different times of the year
- The lack of suitable climatic conditions necessary for the presence and/or detectability of certain species (eg amphibians following heavy rainfall)

Consequently, the results of the flora survey should not be regarded as conclusive evidence that certain conservation significant flora species do not occur within the Project site. However, every reasonable effort has been made to detect and accurately identify all such species, given the disturbed nature of the site.

6.3 Existing environment

6.3.1 Desktop review

6.3.1.1 Regional Ecosystems

Analysis of the EHP RE mapping for the Project site (refer Appendix C) indicates that three REs are present within the south-western portion of the Project site. The following REs are mapped as occurring on site: RE12.1.3, RE12.3.6 and RE12.3.5a. These REs are described in Table 6.2 below.

Table 6.2 Regional Ecosystems identified within the Project site

Regional Ecosystem	Management status		Description (adapted from the RE Description Database)
	VM Act status	Biodiversity status	
12.1.3	Least concern	No concern at present	Mangrove shrubland to low closed forest. Occurs on Quaternary estuarine deposits
12.3.6	Least concern	No concern at present	*Melaleuca quinquenervia* +/- *Eucalyptus tereticornis, Lophostemon suaveolens, Corymbia intermedia* open forest to woodland with a grassy ground layer dominated by species such as *Imperata cylindrica*. *Eucalyptus tereticornis* may be present as an emergent layer. *Eucalyptus seeana* may also occur in this ecosystem to the south and east of Brisbane. Occurs on Quaternary floodplains and fringing drainage lines in coastal areas

Regional Ecosystem	Management status		Description (adapted from the RE Description Database)
	VM Act status	Biodiversity status	
12.3.5a	Least concern	No concern at present	*Melaleuca quinquenervia, Casuarina glauca* +/- *Eucalyptus tereticornis, E. siderophloia* open forest. Occurs on lowest terraces of Quaternary alluvial plains in coastal areas. Palustrine wetland **Note:** This RE has been identified as providing Essential Habitat for the Wallum froglet (*Crinia tinnula*) within the Project site.

Table note:
VM Act = *Vegetation Management Act 1999* (Qld)

6.3.1.2 Essential Habitat

Analysis of the EHP Essential Habitat mapping for the Project site (refer Appendix C) indicates that essential habitat associated with a single species (ie Wallum froglet (*Crinia tinnula*)) is located within the Project site, in association with RE 12.3.5a. A description of RE 12.3.5a is provided in Table 6.2 and a description of the essential habitat mapped within the Project site is provided in Table 6.3 below.

Table 6.3 Essential habitat identified within the Project site

Essential habitat code	Scientific name	Common name	Conservation status of species (NC Act)	Vegetation community
686	*Crinia tinnula*	Wallum froglet	Vulnerable	Vegetation community is a mandatory essential habitat factor for this species. Permanent to ephemeral acidic (pH 4.3 - 5.2), soft freshwater in Melaleuca (eg *M. quinquenervia*) swamps, sedgeland, wet and dry heathland (eg *Banksia robur*, *Xanthorrhoea* sp.) and wallum (*Banksia aemula* shrubland/woodland) areas coastal lowlands on sand or sandstone, occasionally in adjacent open forest/woodland (eg *Eucalyptus racemosa, Corymbia citriodora*) with heathy understorey; known to persist in small remnants (<10ha); may be found well away from water.

6.3.1.3 Flora

Analysis of State and Commonwealth databases indicates that nine conservation significant flora species have been identified, or have the potential to occur, within 3 km of the Project site. These species are listed in Table 6.4 below. An assessment of the likelihood of occurrence for these species was conducted and it was determined that no conservation significant flora species were likely to occur within the Project site. The assessment of the likelihood of occurrence of these species is provided in Appendix H.

Table 6.4 Conservation significant flora species identified as potentially occurring within the Project site

Scientific name	Common name	Conservation status		Source of record
		NC Act	EPBC Act	
Arthraxon hispidus	Hairy-joint Grass	Vulnerable	Vulnerable	EPBC Protected Matters Search
Bosistoa transversa	Three-leaved Bosistoa, Yellow Satinheart	Least concern	Vulnerable	EPBC Protected Matters Search
Cryptocarya foetida	Stinking Cryptocarya, Stinking Laurel	Vulnerable	Vulnerable	EPBC Protected Matters Search
Dichanthium setosum	Bluegrass	Least concern	Vulnerable	EPBC Protected Matters Search

Scientific name	Common name	Conservation status		Source of record
		NC Act	EPBC Act	
Macadamia integrifolia	Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak	Vulnerable	Vulnerable	EPBC Protected Matters Search
Macadamia tetraphylla	Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut	Vulnerable	Vulnerable	EPBC Protected Matters Search
Phaius australis	Lesser Swamp-orchid	Endangered	Endangered	EPBC Protected Matters Search
Samadera bidwillii	Quassia	Vulnerable	Vulnerable	EPBC Protected Matters Search
Thesium australe	Austral Toadflax, Toadflax	Vulnerable	Vulnerable	EPBC Protected Matters Search

6.3.1.4 Fauna

Analysis of State and Commonwealth databases indicates that 24 conservation significant fauna species have been identified, or have the potential to occur, within 3 km of the Project site. These species are listed in Table 6.5 below. An assessment of the likelihood of occurrence for these species was conducted and it was determined that no conservation significant fauna species were likely to occur within the Project site. The assessment of the likelihood of occurrence of these species is provided in Appendix H.

Table 6.5 Conservation significant fauna species identified as potentially occurring within the Project site

Scientific Name	Common Name	Conservation status		Source of record
		NC Act	EPBC Act	
Birds				
Anthochaera phrygia	Regent honeyeater	Endangered	Critically endangered	EPBC Protected Matters Search
Botaurus poiciloptilus	Australasian bittern	Least concern	Endangered	EPBC Protected Matters Search
Charadrius mongolus	Lesser sand plover	Special least concern	Endangered	Wildlife Online
Calidris ferruginea	Curlew sandpiper	Special least concern	Critically endangered	Wildlife Online, EPBC Protected Matters Search
Calidris canutus	Red knot	Special least concern	Endangered	Wildlife Online
Dasyornis brachypterus	Eastern bristlebird	Endangered	Endangered	EPBC Protected Matters Search
Erythrotriorchis radiatus	Red goshawk	Vulnerable	Vulnerable	EPBC Protected Matters Search
Geophaps scripta	Squatter pigeon (southern)	Vulnerable	Vulnerable	EPBC Protected Matters Search
Lathamus discolor	Swift parrot	Endangered	Critically endangered	EPBC Protected Matters Search
Limosa lapponica baueri	Western Alaskan bar-tailed godwit	Special least concern	Vulnerable	Wildlife Online, EPBC Protected Matters Search

Scientific Name	Common Name	Conservation status		Source of record
		NC Act	EPBC Act	
Numenius madagascariensis	Eastern curlew	Vulnerable	Critically endangered	Wildlife Online, EPBC Protected Matters Search
Pachyptila turtur sub-antarctica	Fairy prion (southern)	Least concern	Vulnerable	EPBC Protected Matters Search
Poephila cincta cincta	Southern black-throated finch	Endangered	Endangered	EPBC Protected Matters Search
Rostratula australis	Australian painted snipe	Vulnerable	Endangered	EPBC Protected Matters Search
Turnix melanogaster	Black-breasted button-quail	Vulnerable	Vulnerable	EPBC Protected Matters Search
Reptiles				
Delma torquata	Adorned delma, Collared delma	Vulnerable	Vulnerable	EPBC Protected Matters Search
Saiphos reticulatus	Three-toed Snake-tooth Skink	Least concern	Vulnerable	EPBC Protected Matters Search
Mammals				
Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat	Vulnerable	Vulnerable	EPBC Protected Matters Search
Dasyurus hallucatus	Northern Quoll, Digul	Least concern	Vulnerable	EPBC Protected Matters Search
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed quoll, Spotted-tail quoll, Tiger quoll (south-eastern mainland population)	Vulnerable	Endangered	EPBC Protected Matters Search
Petauroides volans	Greater glider	Least concern	Vulnerable	EPBC Protected Matters Search
Phascolarctos cinereus	Koala	Vulnerable	Vulnerable	Wildlife Online, EPBC Protected Matters Search
Pteropus poliocephalus	Grey-headed flying-fox	Least concern	Vulnerable	Wildlife Online, EPBC Protected Matters Search
Xeromys myoides	Water mouse, False water rat, Yirrkoo	Vulnerable	Vulnerable	EPBC Protected Matters Search

6.3.2 Site based assessment

6.3.2.1 Flora

6.3.2.1.1 Regional Ecosystems

As indicated in Section 6.3.1, three REs have been identified as potentially occurring within the Project site. Site investigations indicate that only a single RE (ie RE 12.1.3) is present within the Project site.

Areas currently mapped as RE 12.3.6 and 12.3.5a on the EHP certified RE map contained neither the species diversity nor abundance that would render them eligible for mapping as a RE. Areas mapped as RE 12.3.6 and 12.3.5a were found to be dominated by Swamp oak (*Casuarina glauca*) which is typical of areas subject to historic planting of the species at this location. In addition, modification of the land surface into furrows (refer Photo 6.1) confirms that trees within areas mapped as RE 12.3.6 and RE 12.3.5a have been planted.

Photo 6.1 Vegetation contained within areas mapped as Remnant RE 12.3.5a and 12.3.6

6.3.2.1.2 Vegetation communities

Four broad vegetation communities (refer Figure 6.1) have been identified as occurring within the Project site, including:

- Community 1: *Casuarina glauca* plantation (non-remnant)
- Community 2: Grassland with isolated trees (non-remnant)
- Community 3: Mangrove (primarily *Avicenna marina*) tidal community (non-remnant and RE 12.1.3)
- Community 4: Marine wetland with isolated mangroves (non-remnant and RE 12.1.3)

With the exception of Community 2, all vegetation communities identified on site contain species considered to be marine. This has resulted from marine hydrological processes and dispersal of marine flora seeds with tidal flows and historic plantings (ie establishment of *Casuarina glauca* on site).

While the Project site is not located in a Wetland Protection Area, as defined under the EP Reg and the *State Development Assessment Provisions, Module 11: Wetlands and wild rivers*, a portion of the Project site (on the north west boundary) is mapped as a wetland of High Ecological Significance (refer Appendix C). While field investigations have confirmed that a portion of the Project site exhibits the characteristics of a wetland, the Project site is located within a highly modified area with existing and future development proposed under the Brisbane Airport 2014 Master Plan. In addition, appropriate mitigation measures will be implemented to reduce any potential impacts on the receiving environment (refer Section 6.5).

A brief description of the dominant species assemblages encountered within each vegetation community is provided in Table 6.6. A flora species list for the Project site is included in Appendix I.

Table 6.6 Vegetation communities

Vegetation community	Description	Photograph
Vegetation community 1 – *Casuarina glauca* plantation	This vegetation community dominates most of the Project site. Swamp She-oak (*Casuarina glauca*) dominates the canopy stratum (18 – 20 m). These species have been planted in rows over the majority of the Project site. A sub-canopy is absent within this community, however, a clearly defined shrub stratum of Lantana (*Lantana camara*) occurs, with an average height of 1 – 3 m and an approximate cover of 70%. The ground cover in this community contains exotic grasses such as Elastic grass (*Eragrostis tenuifolia*), Couch grass (*Cynodon dactylon*) and Salt couch (Sporobolus virginicus), Rhodes grass (*Chloris gayana*), Green panic (*Megathyrsus maximus*), Red natal grass (*Melinis repens*) and Common reed (*Phragmites australis*), particularly in areas subject to tidal inundation.	

Vegetation community	Description	Photograph
Vegetation community 2 - Grassland with isolated trees	Vegetation Community 2 is largely devoid of canopy and shrub specie as a result from historic clearing activities. Although little structural complexity exists in the form of an upper, or shrub stratum, dense grass grown has resulted in a structurally complex ground stratum in areas that have not been subject to recent slashing. In areas that are maintained (ie regularly slashed) structural complexity of the ground stratum is relatively poor. The ground stratum within this area is dominated by exotic species including Elastic grass (*Eragrostis tenuifolia*), Couch grass (*Cynodon dactylon*), Rhodes grass (*Chloris gayana*), Green panic (*Megathyrsus maximus*) and Red natal grass (*Melinis repens*). A small area to the north east, adjacent to the marine wetland with mangroves appears to be an artificial wetland. The area is dominated by Broad-leaved cumbungi (*Typha orientalis*), Common reed (*Phragmites australis*) and other freshwater aquatic macrophytes such as Reeds (*Baumea* spp) and *Persicaria* spp. Due to the dense vegetation, this area provides good habitat for cryptic bird species such as Lewin's rail (*Lewinia pectoralis*), Australian painted snipe (*Rostratula australis*) and the Australasian Bittern (*Botaurus poiciloptilus)*.	

Vegetation community	Description	Photograph
Vegetation community 3 – Mangrove (*Avicennia marina*) tidal community	Vegetation Community 3 is located in the middle of the site and follows the Grey mangroves (*Avicennia marina*) tidal creek line across the site. Grey Mangroves (*Avicennia marina*) dominate the canopy stratum (85% cover) with a height of approximately 18 – 20 m. The sub-canopy was also dominated by Grey mangroves which approximated 3 – 5 m in height and 10% cover. Along the drainage lines, Yellow mangroves (*Ceriops tagal*) dominated the understory, forming thickets approximating 1-2 m in height and a cover of 40%. The ground stratum within this vegetation community was dominated by Salt couch (*Sporobolus virginicus*) although other salt tolerant species such as *Tetragonia tetragonoides* (New Zealand spinach), *Einadia hastate* (Berry saltbush), *Enchylaena tomentosa* (Ruby saltbush) and *Suaeda arbusculoides* (Jelly-bean plant) were also present Spring tides are expected to inundate areas of this vegetation community several times a year. Accordingly, this vegetation community is defined as a Wetland under the definition provided in the *Strategy for Conservation and Management for Queensland's Wetlands* (EHP 2009): *"areas of permanent or periodic/intermittent inundation, whether natural or artificial, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6 m".* This area is typical of a vegetation community that constitutes a marine area under the provisions of the Fisheries Act.	

Vegetation community	Description	Photograph
Vegetation community 4 – Marine wetland with mangroves	Vegetation Community 4 are two small pockets of vegetation located in southern portion of the site. The vegetation community is dominated by marine species including the Grey mangrove (*Avicenna marina*) and Swamp she-oak (*Casuarina glauca*) with large areas containing open water largely devoid of terrestrial vegetation. The ground stratum within this vegetation community, surrounding marine waters was dominated by Salt couch (*Sporobolus virginicus*) although other salt tolerant species such as *Tetragonia tetragonoides* (New Zealand spinach), *Einadia hastate* (Berry saltbush), *Enchylaena tomentosa* (Ruby saltbush) and *Suaeda arbusculoides* (Jelly-bean plant). This area is typical of a vegetation community that constitutes a marine area under the provisions of the Fisheries Act.	

6.3.2.1.3 Species diversity and conservation significant species

In total, 67 flora species were identified within the Project site, with 36 native flora species (53.7%). Nine flora species are considered to be obligatory marine species (eg grey and yellow mangroves). However, no conservation significant flora species, as listed under the provisions of the NC Act and/or the EPBC Act, were identified within the Project site. A complete list of flora species identified within the Project site is provided in Appendix I.

A likelihood of assessment was undertaken for conservation significant species potentially occurring within the Project site (refer Appendix H). Based on this assessment, it is considered unlikely that any conservation significant flora species (as identified within Table 6.4) occur within the Project site (refer Appendix H).

6.3.2.1.4 Weeds

No Weeds of National Significance (WoNS; as listed under the provisions of the EPBC Act) were detected within the Project site during field investigations. Eight weeds listed under Schedule 2 of the Biosecurity Act were recorded within the Project site (refer Table 6.7). Numerous other weed species which are not declared under Commonwealth or State legislation, but are generally considered to be environmental weeds also occur within the Project site (refer Appendix I).

Table 6.7 Environmental weeds recorded within the Project site

Botanical name	Common name	EPBC WoNS	Biosecurity Act
Ambrosia artemisiifolia	Annual ragweed	×	Schedule 2
Asparagus aethiopicu	Basket asparagus fern	✓	Schedule 2
Asparagus plumosus	Feathered asparagus fern	✓	Schedule 2
Baccharis halimifolia	Groundsel bush	×	Schedule 2
Celtis sinensis	Chinese elm	×	Schedule 2
Dolichandra unguis-cati	Cat's claw creeper	✓	Schedule 2
Lantana camara	Lantana	✓	Schedule 2
Schinus terebinthifolius	Broadleaf pepper tree	×	Schedule 2

6.3.2.2 Fauna

6.3.2.2.1 Fauna species observed on site

Fifteen fauna species were recorded during field investigations of the Project site. Of these species, 14 were birds and one was a reptile. No mammals or amphibians were observed. With the exception of one species (ie Rainbow bee-eater *Merops ornatus*), all species observed as listed are least concern species under the provisions of the NC Act. A complete list of all fauna observed during the field survey is provided in Appendix I.

6.3.2.2.2 Conservation significant species

A review of environmental databases identified 24 conservation significant fauna species (listed under the provisions of the EPBC Act and NC Act) as potentially occurring within 3 km of the Project site (refer Appendix I). In addition to these species, correspondence with BAC and a previous fauna study (Lambert & Rehbein 2004) has indicated that Illidge's ant-blue butterfly (*Acrodipsas illidgei*), listed as Vulnerable under the NC Act, has potential to occur within the Project site, although it is noted that this species was not returned as part of the desktop review (ie not included within the Wildlife online records).

One Special Least Concern bird species (Rainbow bee-eater) as listed under the NC Act and listed as Marine under the provisions of the EPBC Act was observed during field investigations of the Project site. No other conservation significant fauna species were identified during the incidental fauna survey. Despite this, the likelihood of their occurrence within the Project site was assessed based on the suitability of habitat present (refer Appendix H). Given the geographic location of the Project site, entirely marine and/or pelagic species have been omitted from this assessment.

Based on the likelihood of occurrence assessment (refer Appendix H), the following conservation significant species have potential to occur within the Project site:

- Australasian bittern (*Botaurus poiciloptilus*)
- Red knot (*Calidris canutus*)
- Western Alaskan bar-tailed godwit (*Limosa lapponica baueri*)
- Eastern curlew (*Numenius madagascariensis*)
- Australian painted snipe (*Rostratula australis*)
- Grey-headed flying-fox (*Pteropus poliocephalus*)
- Water mouse (*Xeromys myoides*)

In addition, suitable habitat in the form of mature mangroves exists on site for the Illidge's ant-blue butterfly (*Acrodipsas illidgei*).

All species identified as having potential to occur within the Project site are associated with marine wetlands or mangrove communities and environments directly associated with wetlands (ie grassy areas).

6.3.2.2.3 Pests

No fauna species declared under the *Biosecurity Act 2014* were recorded in the Project site during field investigations.

According to the Fire ant biosecurity map (DAF 2016), the Project site is located within Fire ant biosecurity zone 3. As such, there are restrictions on fire ant carriers (eg soil, mulch, turf, potted plants etc) movements. Under the *Biosecurity Act 2014*, all individuals and organisations have a general biosecurity obligation to take all reasonable steps to ensure they do not spread fire ants.

6.3.2.2.4 Habitat values

The Project site and its surrounds are considered to be highly disturbed and modified environments, which has resulted in habitat fragmentation and a reduction in the quantity and quality of fauna habitat resources. Despite this, tidal inundation within the Project site facilitates the formation of food-rich environments for fish, crabs, molluscs and birds that utilise marine wetlands.

Mangroves typically provide large amounts of organic matter, which is consumed by many small aquatic animals. Subsequently, these animals are consumed by larger fish and other animals.

Spring tides are expected to effect a portion of the Project site several times a year. During this time, salt couch provides suitable shelter for fish and invertebrates, and foraging opportunities for wader birds.

A portion of the Project site is mapped as Essential Habitat for Wallum froglet (*Crinia tinnula*) (refer Appendix C). This mapping is noted as being erroneous as habitat for this species does not exist within the Project site. Further, the Wallum froglet is not a salt tolerant species and therefore is not expected to occur at this location.

Existing habitat within the Project site is considered fragmented in the regional landscape as a result of historical agricultural land use, planting activities, existing airport infrastructure, and current airport operations. Mangrove communities, associated with the Project site’s artificial drainage systems, offer limited fauna movement opportunities to small coastal habitats to the east of the Project site and it is expected that only highly agile species (eg birds) are likely to utilise the Project site.

6.4 Potential impacts

The Project has potential to impact on the habitat and native biodiversity of the Project site. Potential impacts associated with the Project are discussed in the following sections.

6.4.1 Flora

As discussed in Section 6.3.2.1, there are no significant flora species identified within the Project site. Therefore, it is considered that the Project will not have any adverse consequences to significant flora as per clause 4.04 of the AEPR.

Removal of vegetation within the Project site is not expected to result in regional or sub-regional affects to the conservation status of any conservation significant flora species.

Mangroves and salt couch are considered marine plants under the provisions of the Fisheries Act. Marine plants are an integral feature of coastal environments that provide food-rich environments for fish, crabs, molluscs and birds. Disturbances to marine plants, even of a minor nature, can lead to a long term decline in fish production and overall aquatic health. However, the current fragmented and disturbed nature of the Project site provides limited habitat value and, combined with the absence of conservation significant species, it is considered that removal of these marine plants will not constitute a significant impact. In addition, mitigation measures will ensure that potential impacts to the receiving environment associated with removal of marine plants are minimised.

The machinery and equipment used during the construction phase may facilitate the proliferation of weed species to adjacent areas, if control measures are not appropriately implemented to avoid dispersal of seeds. Weeds declared under the provisions of the Biosecurity Act were identified on site. These weeds will be destroyed as part of the Project to prevent proliferation of these weeds in areas adjacent the Project site that might otherwise occur if left unattended.

Dust generation, resulting from construction earthworks (ie vegetation clearing, traffic movement over bare surfaces, and rock crushing activities), has the potential to impact upon neighbouring mangroves and other native vegetation. Dust accumulation has the potential to adversely affect the photosynthetic processes of vegetation by reducing the leaves' exposure to direct sunlight, and by causing blockages of the leaf stomata, thereby preventing adequate uptake of oxygen and carbon dioxide, causing an overall decline in plant health. Dust suppression measures during the construction phase will be important to minimising the impact to vegetation and are discussed in Section 8.

6.4.2 Fauna

As discussed in Section 6.3.2.2, there were no conservation significant fauna species identified within the Project site. Therefore, it is considered that the Project will not have any adverse consequences to significant fauna as per clause 4.04 of the AEPR.

Removal of fauna habitat within the Project site is not expected to result in regional or sub-regional affects to the conservation status of any conservation significant fauna species.

The removal of marine plants (mangroves and salt couch), in particular, can lead to a long term decline in fish production and overall aquatic health. Furthermore, clearing activities may lead to significant fish losses and decline in water quality, if appropriate mitigation measures for ASS are not implemented. Mitigation measures will be implemented in order to minimise the impact associated with fauna habitat removal.

Direct fauna mortality has the potential to occur within the construction phase of the Project as a result of vegetation clearing, potential ASS exposure and runoff. Mitigation measures (including those outlined in Section 6.5) will be required in order to minimise the risk of direct fauna mortality.

Fauna mortality could also potentially occur to marine species during filling of existing drains. This includes fish, crabs and molluscs which may be unable to relocate from the drains to be filled without assistance. Mitigation measures have been provided in Section 6.5 to assist with the management of this potential impact.

Introduction and encouragement of pest fauna species (under the provisions of the EPBC Act and Biosecurity Act) is considered possible during the construction phase of the Project. However, mitigation measures will be implemented in order to decrease the likelihood of proliferation.

As discussed in Section 6.3.2.2.4, mangrove communities (associated with the Project site's manmade drainage systems) offer limited fauna movement opportunities, by forming linkages to small coastal habitats to the east of the Project site. Potential impacts to fauna movement corridors are considered negligible, as a result of the fragmented nature of the broader landscape resulting from historic and present land use.

Displacement of fauna within, and adjacent to, the Project site is expected as a result of noise and possible artificial lighting during the construction phase. However, given the proximity of the Project site to the Brisbane Airport, and the exposure of noise generated from the flight path, it is likely that local bird populations are familiar with artificial lighting and high levels of background noise. As such, artificial lighting and noise are not considered to pose a significant impact to fauna within the vicinity of the Project site.

Dust is expected to be generated as a result of construction earthworks (ie vegetation clearing, traffic movement over bare surfaces, rock crushing activities, and stock piling). Dust impacts on fauna that forage on mangrove leaves (eg invertebrates) are not well known, however, the risks associated with dust deposition are considered to be negligible provided that appropriate dust suppression measures are applied.

6.5 Mitigation measures

Table 6.8 provides recommended management measures to mitigate the potential impacts identified above.

Table 6.8 Flora and fauna potential impacts and mitigation measures

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Loss of native vegetation				
Removal of marine plants listed under the provisions of the Fisheries Act resulting in possible decline in fish production and overall aquatic health Removal of native vegetation protected under the provisions of the NC Act Clearing of trees (ie mangroves) that provide habitat values for terrestrial and aquatic species Decrease in floral diversity within the Project site as a result of clearing activities Loss of native vegetation caused by clearing beyond that which is required for construction	The lawful clearing of native vegetation (particularly marine plants) will be offset within the Brisbane Airport's Biodiversity Zone Implement control measures to ensure that clearing limits during construction are clearly identified and adhered to	■ Ensure all necessary permits/approvals are in place before construction commences ■ The Contractor shall ensure vegetation for retention (including on adjacent land) is protected by exclusion fences in appropriate locations ■ The exact location of vegetation to be retained shall be verified on site in consultation with the BAC Environmental Advisor	Detailed design and construction	Vegetation to be retained is protected from damage/ destruction. Requirement to be included in the EMP.

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Impact on flora and fauna as a result of ASS exposure				
Acidification of waterways, wetlands, and estuaries which leads to fish kills Degradation of ecology through loss of water quality, degradation of habitat and decline in dependent ecosystems Negative impact on macrophytes and other aquatic vegetation that aquatic animals depend on for food, shelter and reproduction. Potential impact on downstream habitats for various waterbirds, including federally listed migratory species and those listed under international agreements	Avoid disturbance of ASS Construction activities do not result in the exposure of ASS	■ All site works are to be conducted in accordance with the ASS Management Plan (refer Appendix F)	Detailed design and construction	Requirement to be included in the EMP

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Introduction and proliferation of pest and weed species				
Proliferation of pest and weed species within and adjacent to the Project site Beneficial removal of weeds and pests from the Project site	There are no net increase in declared weeds and pests within the Project site and surrounding environments as a result of construction activities	The Contractor shall prepare and implement a pest and weed management plan as part of the CEMP, incorporating the following measures: ■ Ensure that declared species are removed in accordance with the EPBC Act and Biosecurity Act requirements, and the material disposed of in a manner that ensures proliferation does not occur – appropriate measures may include weed treatment prior to construction works, disposal at a green waste facility, while ensuring it is transported safely, buried or added to on site mulching ■ Report suspected outbreaks of declared weed species to the BAC Environmental Advisor ■ Report sightings of declared pest animals (as listed under the provisions of the EPBC Act and NC Act) to the BAC Environmental Advisor and implement appropriate management measures ■ Do not deliberately introduce declared weed and/or pest species as listed under the provisions of the EPBC Act and/or Biosecurity Act ■ Implement measures to ensure that all plant and materials brought into the Project site are certified free of declared pests ■ Implement waste management measures to avoid increased abundance of pests and opportunistic native fauna ■ Any excess fill leaving Brisbane Airport and 'Fire ant biosecurity Zone 3' must be accompanied by a biosecurity instrument permit from DAF	Detailed design and construction	Requirement to be included in the EMP

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Loss of fauna and/or habitat				
Unnecessary clearing of fauna habitat within the Project site Net loss of fauna habitat area, quality, and diversity, within the broader region Unnecessary clearing of fauna habitat Unnecessary removal/ displacement/ translocation of fauna species Fauna injury/death as a result of construction activities Adjoining habitat is adversely affected by secondary impacts	Aim to minimise net loss of habitat area, quality and diversity within the broader region where practicable Avoid fauna injury and/or death resulting from construction activities Ensure that secondary impacts associated with the proposed development are considered, and avoided, where possible	Staged and sequential clearing measures shall be implemented to enable fauna to disperse to adjoining habitats. Implement the fauna management measures provided in the EMP, which includes, but is not limited to the following: ■ A pre-clearing habitat assessment is to be conducted by a licenced and suitably qualified spotter catcher immediately prior to construction works commencing. The spotter catcher shall remain on call during all vegetation clearing activities ■ All native wildlife (including snakes) are protected and shall not be intentionally harmed as a result of works or workers' actions ■ Relocate potential habitat features (eg hollow logs) to adjacent areas if identified by the fauna spotter catcher ■ Outline procedures to be undertaken if an animal (healthy or injured) is encountered during construction ■ Check culverts, trenches and other excavations (that have been constructed in accordance with the ASS Management Plan) for fauna species (to be checked each morning and after periods of inactivity to ensure no animal is trapped or likely to be harmed by construction activities) ■ Install trench ramps at 15 degree slopes every 30 m or place branches or suitable material for fauna to climb and escape from trenches ■ Workers are to be made aware of fauna management on site during the site induction ■ Include details of fauna protection measures in the site induction for all construction personnel ■ Contact the BAC Environmental Advisor in the event that an animal is injured during construction, followed by 1300 Animal (1300 264 625)	Detailed design and construction	Requirement to be included in the EMP
		■ The Contractor shall implement actions recommended in all other sections of this EAR relevant to the following: – Erosion and sediment control – Water quality management – Waste management – Adhere to the mitigation measures stipulated in the ASS Management Plan		

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Marine fauna death as a result of the filling and realignment of existing drains	Ensure marine fauna within the drains to be filled are appropriately relocated	All external drains are to be bunded to prevent tidal ingress. Drains to be filled should be filled during low or no flow condition using the following sequence of works: 1) Construct the new section of the drain, where required 2) Install marine fauna exclusion fencing upstream and downstream of the sections of drain to be filled prior to marine fauna load reduction trapping to prevent re-entry of marine fauna into the section of drain to be filled 3) A suitably qualified spotter catcher should undertake pre-realignment marine fauna load reduction trapping within the section of the drain to be filled 4) Captured marine fauna should be relocated to another section of the drain not being impacted by the works 5) Undertake drain alignment change over at low tide, where required 6) Undertake a post-realignment spotter catcher survey and relocate any remaining fauna, where required It should be noted that experience during previous projects involving the realignment of drains has identified a large number of fauna within the existing drain to be realigned. The Contractor is to ensure they have a suitable number of spotter catchers on site to undertake the work successfully.	Construction	Requirement to be included in the EMP
Impact of dust on the health of vegetation				
Dust deposition on adjacent vegetation during construction activities (vegetation clearing, traffic movement over bare surfaces, rock crushing activities, and stock piling)	Ensure the health of adjacent vegetation communities are not affected by dust generated during construction	Manage dust in accordance with the mitigation measures identified in Section 8.7	Detailed design and construction	Requirement to be included in the EMP
Noise				
Generation of both intermittent and continuous loud noise as a result of construction activities	Minimise the effects of excessive noise on fauna, where possible	Manage noise in accordance with the measures identified in Section 9.6	Detailed design and construction	Requirements to be included in the EMP

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Lighting				
Generation of additional lighting during construction of the Project	Minimise the effects of lighting on fauna in and adjacent to the Project site	Position lighting, and use light fittings which will results in the minimal dispersion of light (eg LED lighting) outside of the Project site during construction while ensuring that it is consistent with aviation safety requirements discussed in Section 13.6 Avoid the use of mercury lamps, where possible, as these have a tendency to attract fauna, particularly insects	Detailed design and construction	Requirements to be included in the EMP

7 Hydrology and water quality

7.1 Introduction

This section provides a summary of the hydrology (surface water) and hydrogeology (groundwater) water quality issues associated with the Project.

7.2 Methodology

A desktop review of the Project information and data as well as current legislation, guidelines and water quality objectives that apply to the construction of the Project has been undertaken. A review of the existing surface water and groundwater quality is provided. This has been used to provide an indication of the baseline quality of the environment from which potential impacts from the construction and operation of the Project were able to be identified. Mitigation measures addressing the identified potential impacts have been recommended in Section 7.6.

7.3 Relevant documents

7.3.1 Airports (Environment Protection) Regulations 1997

Schedule 2 of the AEPR lists the acceptable limits of various physical-chemical, nutrients, metals and biological parameters. These limits assist in assessing the baseline water quality for the Project site.

7.3.2 Environmental Protection (Water) Policy 2009

Under the EPP (Water), EHP has developed environmental values (EVs) and water quality objectives (WQOs) for the surface water in the areas surrounding the Project site. The purpose of the EPP (Water) is to identify EVs and develop management goals to assess whether EVs are maintained. The EVs and WQOs are detailed in the following documents:

- Environmental Protection (Water) Policy 2009, Brisbane Creeks – Bramble Bay environmental values and water quality objectives No. 142 (part), including Bald Hills, Cabbage Tree, Downfall, Kedron Brook, Nudgee and Nundah creeks (Department of Environment and Resource Management (DERM) 2010a)
- Environmental Protection (Water) Policy 2009, South-east Queensland Map Series PLAN WQ1423 (DERM 2010b)

The catchment is subdivided into a number of sub catchment waterways and the most relevant to the Project site is **Kedron Brook Floodway.** Existing drainage channels on the Project site all flow to Landers Pocket Drain, which discharges to Kedron Brook Floodway.

The identified EV for the Kedron Brook Floodway, as defined in Figure 7.2, are aquatic ecosystems, secondary recreation, visual recreation and cultural and spiritual values.

Water	Environmental values [1, 2, 3, 4]											
	Aquatic ecosystems	Irrigation	Farm Supply/use	Stock water	Aquaculture	Human consumer	Primary recreation	Secondary recreation	Visual recreation	Drinking water	Industrial use	Cultural and spiritual values
Cabbage Tree Creek - including Little Cabbage Tree Creek - freshwater	✓	✓		✓			✓	✓	✓			✓
Cabbage Tree Creek – estuarine and enclosed coastal	✓					✓	✓	✓	✓			✓
Jubilee Creek – estuarine and enclosed coastal	✓							✓	✓			✓
Kedron Brook – Cedar Creek - in Brisbane Forest Park - freshwater	✓						✓	✓	✓			✓
Kedron Brook – Cedar Creek - downstream of Brisbane Forest Park - freshwater	✓	✓		✓			✓	✓	✓			✓
Kedron Brook – Urban reach – including Sandy Creek - freshwater	✓							✓	✓			✓
Kedron Brook – Schultz Canal - freshwater	✓							✓	✓			✓
Kedron Brook – Schultz Canal - estuarine	✓							✓	✓			✓
Kedron Brook – Pound Drain and Cannery Creek - freshwater	✓							✓	✓			✓
Kedron Brook Floodway – including Boondall Wetlands – estuarine and enclosed coastal	✓							✓	✓			✓
Nudgee Creek – estuarine and enclosed coastal	✓					✓		✓	✓			✓

Figure 7.2 EPP environmental values

The WQOs relevant to the Kedron Brook Floodway (tidal canals, constructed estuaries, marinas and boat harbours) to protect aquatic ecosystem EVs include:

- Turbidity: <8 NTU
- Suspended solids: <20 mg/l
- Chlorophyll a: <4 µg/l
- Total nitrogen: <300 µg/l
- Oxidised N: <10 µg/l
- Ammonia N: <10 µg/l
- Organic N: <280 µg/l
- Total phosphorus: <25 µg/l
- Filterable reactive phosphorus: <6 µg/l
- Dissolved oxygen: 85 – 105% saturation
- pH: 7.0 – 8.4
- Secchi depth: >1.0 m

7.3.3 Construction Environmental Management Plan (CEMP) Guidelines

During the construction phase, WQOs are defined by the CEMP Guidelines (BAC 2014d). These WQOs are applicable to discharges from the perimeter drain or any other discharges from the Project site during construction and are summarised in Table 7.1.

Table 7.1 Water quality objectives from CEMP Guidelines

Parameter	Water quality target for rivers	Water quality target for lakes	Water quality target for estuaries	Water quality target for coastal waters
pH	6.5-9.0	6.5-9.0	<0.2 pH unit rise	<0.2 pH unit rise
Total suspended solids (TSS)[1]	<10% increase from the seasonal mean TSS			
Dissolved oxygen (DO)	DO must be greater than 6 mg/l or 80% saturation for a normal 24 hour period			
Temperature	Temperature of receiving water must not rise more than 2°C above the seasonal mean temperature			

Table note:

[1]Where this cannot be achieved for turbidity, the water to be discharged is to be at least 10% less than the receiving environment

7.3.4 Landside Stormwater Quality Management Strategy

BAC has prepared the *Landside Stormwater Quality Management Strategy* (Landside SQMS) (BAC 2014c), which provides guidelines for achieving BAC's desired water quality outcomes across Brisbane Airport. The Landside SQMS refers to the CEMP Guidelines to provide guidance on water quality objectives for the construction phase of the Project.

The Landside SQMS (BAC 2014c) identifies in stream water quality indicators from the AEPR, to ensure the protection of ecological functions. Accepted limits from Schedule 2 of the AEPR are detailed in Table 7.2 for receiving waters around Brisbane Airport.

Table 7.2 Water quality indicators for the Project

Key indicator	Water quality target for rivers	Water quality target for lakes	Water quality target for estuaries	Water quality target for coastal waters
pH	6.5-9.0	6.5-9.0	<0.2 pH unit rise	<0.2 pH unit rise
TSS	<10% increase from the seasonal mean TSS	<10% increase from the seasonal mean TSS	<10% increase from the seasonal mean TSS	<10% increase from the seasonal mean TSS
Total nitrogen (TN)	0.1 mg/L	0.1 mg/L	No guidance provided on TN[1]	No guidance provided on TN[1]
Total phosphate (TP)	0.01 mg/L	0.005 mg/L	No guidance provided on TP[2]	No guidance provided on TP[3]

Table notes:

[1]Nitrates, expressed as N: 0.01 mg/L, Ammonia, expressed as N: 0.005 mg/L
[2]Phosphates, expressed as P: 0.005 mg/L
[3]Phosphates, expressed as P: 0.001 mg/L

Appendix C of the Landside SQMS also identifies the EVs and WQOs of Brisbane Airport's receiving waterways. WQOs are numerical concentration levels or narrative statements of indicators established for receiving water to support and protect the designated EVs of those waters. They are based on scientific criteria or water quality guidelines but may be modified by other (social, cultural, economic) inputs. EVs and WQOs for the relevant receiving waters are identified in the Landside SQMS (BAC 2014c) and are outlined in Table 7.3.

Table 7.3 Receiving waterways – environmental values and water quality objectives

WQOs	Kedron Brook[1,2]	Moreton Bay[1,2]
pH	6.5-8.5	6.5-8.5
DO (%)	80-100 saturation	90-105 saturation
TP (mg/L)	<0.06	<0.03
TN (mg/L)	<0.45	<0.2
Turbidity (NTU)	20	5
Total suspended solids (mg/L)	30	<15
Median faecal coliforms	<14 organisms per 100 ml most probable number (MPN), with no more than 10% of samples exceeding 43 organisms per 100 ml MPN	<14 organisms per 100 ml MPN, with no more than 10% of samples exceeding 43 organisms per 100 ml MPN
Helminths	<10 mg per 100 mL	<10 mg per 100 mL

WQOs	Kedron Brook[1,2]	Moreton Bay[1,2]
EVs	■ Aquatic ecosystems ■ Secondary recreation ■ Visual recreation ■ Cultural and spiritual values	■ Aquatic ecosystems ■ Human consumer ■ Primary recreation ■ Secondary recreation ■ Visual recreation ■ Cultural and spiritual values ■ Seagrasses

Table notes:
[1] Brisbane River Environmental Values and Water Quality Objectives 2007
[2] Brisbane Creeks – Bramble Bay Environmental Values and Water Quality Objectives 2007

It should be noted that the EVs and WQOs relate to the water quality within the receiving waters of the Project site and are not directly applicable to stormwater discharges from the Project. The CEMP Guidelines (BAC 2014d) provide site stormwater WQOs during construction, which are outlined in Table 7.1. Typically, concentration based criteria such as that described in the AEPR are unachievable using the current best practice stormwater treatment devices. Whilst these should continue to be viewed as acceptable limits of pollution, pollutant loads reductions objectives provide tangible, transparent and measureable targets that are achievable and ensure a consistent approach to stormwater quality management.

The pollutant load reduction requirements adopted by BAC are summarised within the Landside SQMS (BAC 2014c). These targets have been adopted for the initial identification of potential mitigation options of stormwater quality impacts from the Project and are included in Table 7.4.

Table 7.4 Landside SQMS pollutant load reduction requirements (BAC 2014c)

Stormwater pollutant	Pollutant reduction targets
TSS	80%
TN	60%
TP	45%
Gross Pollutants	90%
Hydrocarbons	No visible sheen or odour

7.4 Existing environment

7.4.1 Surface water

The historical drainage channels of Brisbane Airport generally consist of meandering tidal inlets. The surface hydrology in the area has been highly modified to redirect surface water flow through drains and canals forming a network of low-lying waterways. Based on historical aerial photography, the surface hydrology of the Project site has been modified from its original configuration, as described in Section 5.4.2. During a phase of development in the 1980s, the Project site has been re-contoured and filled with drainage lines reconfigured.

Two surface water courses are identified as present within the Project site, located in the northeast and southwest (refer Figure 1.1). The northern channel drains north through a culvert towards Nancy Bird Way and discharges to Landers Pocket Drain. The southern channel flows north west through a culvert under Moreton Drive and also discharges to Landers Pocket Drain. Both unnamed watercourses are likely to be ephemeral.

To the north-west, the Project site is bound by Moreton Drive and Landers Pocket Drain (approximately 100 m from the site boundary). Landers Pocket Drain is a canalised watercourse and discharges to the Kedron Brook Floodway Drain.

The Kedron Brook Floodway Drain intercepts regional overland flow that moves through the floodplain area of Brisbane Airport and discharges to Bramble Bay, north east of Brisbane Airport. Bramble Bay is classified as high ecological value (marine) under the *Bramble Bay environmental values and water quality objectives No. 142 (part)* (DERM 2010).

Flood mapping indicates that localised flooding is likely to occur in the immediate vicinity of both watercourses on the Project site, with some additional flooding on the north west and south east boundaries (refer Figures 7.3 and 7.4). Based on aerial photography, low lying areas inundated with surface water are also present on the Project site. These are noted by zones of vegetation die back and iron staining on the surface, likely to be associated with potential ASS.

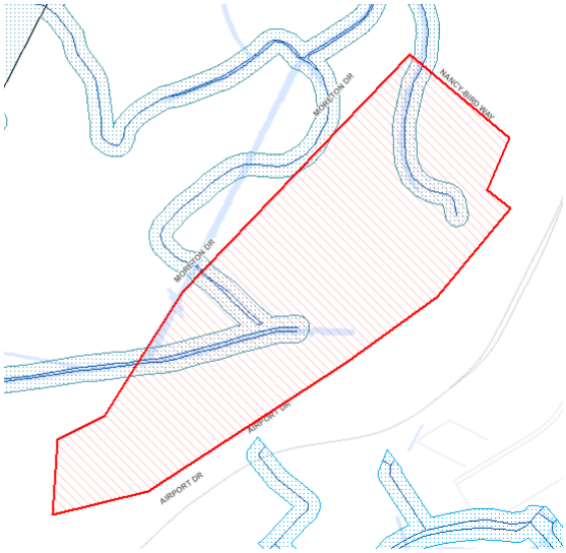

Figure 7.3 BCC PD online – Waterway corridors

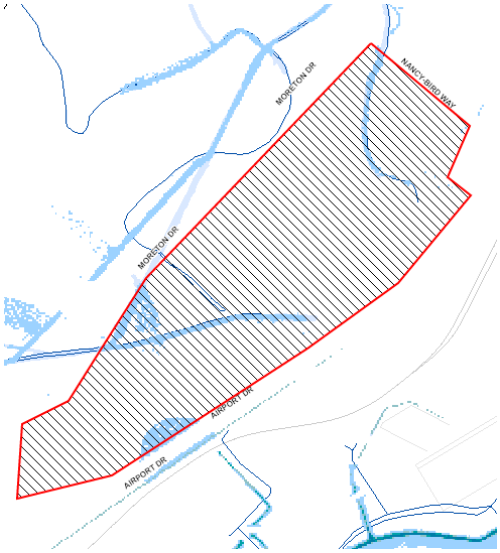

Figure 7.4 BCC PD online – Brisbane River flood planning area

7.4.2 Groundwater

7.4.2.1 Groundwater aquifers

While there are no discrete aquifers present at Brisbane Airport, the geology can be divided into two distinct layers; Upper Holocene alluvia and Lower Holocene alluvia. The shallow aquifer is present in the Upper Holocene, which comprises interlayered clays, silts and sands with low permeability (BAC 2006). The shallow aquifer fluctuates significantly with tidal and rainfall events and discharges to creeks and drains within Brisbane Airport. The Lower Holocene alluvia comprises homogenous clays and silts and contains a deeper groundwater aquifer (BAC 2006). Permeability of the deeper aquifer is very low and groundwater movement is negligible.

It is considered that the Project will not impact on the deeper aquifer given the very low permeability, limited connectivity between the upper and lower aquifers and the ability of the shallow aquifer to discharge into surface water.As such, a shallow groundwater assessment of the Project site was undertaken in two stages by Golders in December 2015 and October 2016. The investigations included the installation of monitoring wells, as well as the monitoring of existing groundwater monitoring wells. The groundwater investigation was detailed in the following reports:

- Golders (2016a) Auto Mall Precinct Stage 1 Contamination report
- Golders (2016b) Auto Mall Precinct Stage 2 Contamination report

Groundwater monitoring locations are indicated in Figure 7.1. Ten boreholes were gauged across two events (4 January 2016 and on 25 October 2016).

7.4.2.2 Groundwater depth

Measured groundwater depths ranged between 0.71 to 2.57 m bgl (0.87 to 2.13 m AD). Boreholes are generally installed within sandy clays and clayey sands.

However, it is noted that groundwater depths are affected by climatic conditions and soil permeability, and potentially tidal influences, and will therefore vary with time. Groundwater monitoring for the proposed parallel runway at Brisbane Airport, in the same floodplain, indicated that during the wet season, the groundwater table height can be expected to be up to 1.0 m higher, and can vary locally with both rainfall and tidal influence (BAC 2006).

7.4.2.3 Groundwater direction

The flow direction was assessed to be towards the west to north west towards Landers Pocket Drain. However, the likely presence of paleo channels within the shallow soils may also exert an influence on groundwater flow direction. The groundwater was found to preferentially follow the course of the historic surface water channels. It was also noted that the geology and soils will have variable hydraulic permeability based on differences between natural ground and fill material used to infill channels and raise ground levels.

7.4.2.4 Groundwater quality

Field physical parameters were measured during the groundwater monitoring events and are summarised in Table 7.5 below.

Table 7.5 Groundwater physical parameters

Parameter	Result	Comment
pH	3.65 – 6.99	Neutral to slightly acidic conditions
Conductivity	1.953 – 51.4 mS/cm	Brackish to saline conditions
Redox	-40.2 to 100.0 mV	Generally anoxic with localised area of anoxic conditions
DO	0.8 – 1.83 mg/L	Low levels of dissolved oxygen in groundwater
Temperature	20.9 – 22.7°C	-

During the ASS investigation, groundwater monitoring results indicated:

- Electrical conductivity ranged from 1,953 to 51,400 µS/cm indicating brackish to saline water conditions
- pH levels ranged from 3.65 to 6.99 indicating acidic to neutral conditions (with the lowest pH levels occurring along the western boundary)
- The buffering capacity of the groundwater varied across the Project site as follows:
  - Groundwater within the northern section of the Project site contained very high alkalinity with a buffering capacity that is adequate to maintain an acceptable pH level
  - Groundwater within the central and southern section of the Project site contained moderate alkalinity with a buffering capacity that is inadequate to maintain a stable, acceptable pH level in areas vulnerable to acidification
  - Groundwater within the southernmost portion of the Project site contained a total acidity that exceeded total alkalinity in the majority of samples indicating a very low buffering capacity that is inadequate to maintain a stable, acceptable pH level in areas vulnerable to acidification
- Dissolved aluminium concentrations of greater than about 1 mg/L in groundwater may be an indicator of AASS. Concentrations were below the laboratory detection limit, with the exception of:
  - AM-BH01 (3.59 mg/L)
  - AM-BH19 (0.06 mg/L)
  - AM-BH14 (0.08 mg/L)
- Dissolved iron concentrations ranged from <0.05 to 294 mg/L
- The chloride:sulfate ratio indicates that past oxidation of PASS has occurred within the Project site

7.5 Potential impacts

7.5.1 Surface water quality

A range of surface water quality impacts have potential to occur during Project works, such as:

- Sedimentation of drainage lines and watercourses from construction activities including clearing of vegetation and earthworks activities due to inadequate erosion and sediment control measures and high rainfall incidence
- Potential disturbance of AASS and PASS, resulting in a decline in water quality
- Hydrocarbon and chemical spills from construction plant and vehicles
- Release of weed seeds and pathogens into drainage lines from vehicles and machinery traversing the Project site
- Discharges from temporary sewerage and site facilities
- Storage and disposal of waste material including spoil placement resulting in the potential leaching of any contaminants
- Litter and rubbish from occupation by construction workers

While there is currently potential for localised flooding to occur within the Project site, Phase 2 works involve raising the Airport Drive median by up to 200 mm in lower areas through landscaping to achieve 1:100 year flood immunity around the Project site. In addition, the existing major culvert crossings will be installed with permanent tidal gates to prevent backwater from regional flood events and storm surge/tidal events entering the Project site once developed.

During Phase 1 earthworks, the existing major culvert crossings entering the Project site will be bunded to prevent tidal water ingress.

Storage basins/channels with a capacity of 44,200 m^3 will be installed for flood storage during storm events.

7.5.2 Groundwater

Potential groundwater impacts during the Project works include:

- The potential for groundwater contamination from fuel and chemical storage and use
- Contamination of exposed groundwater through spills, leaks and surface runoff entering the excavations
- Infiltration of impacted leachate from stockpiled soil originating from the excavations
- The intersection or interaction with the groundwater table of cut and fill earthworks and embankments
- Interference to existing groundwater monitoring bores during construction such that damage to well head infrastructure compromises the seals protecting the groundwater aquifer
- Acid drainage from ASS disturbance potentially impacting groundwater quality
- The production of acid leachate through groundwater fluctuations/disturbances
- Movement of groundwater containing PFAS from the Project site due to surcharge activities

The construction of cuttings and structures can often require dewatering and the intersection of the water table through excavation may lead to passive dewatering of the surrounding groundwater table. In addition, removal of vegetation may result in the rising of the local groundwater table, increasing the likelihood of encountering groundwater during excavation works.

7.6 Mitigation measures

Table 7.6 provides a summary of the management measures for surface water and groundwater to address the potential impacts identified above.

Table 7.6 Water quality potential impacts and mitigation measures

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Surface water				
Inadequate fuel and chemical storage and usage areas allowing runoff to watercourses	Provide adequate facilities for the refuelling of plant and machinery and storage of chemicals and fuels in locations at least 50 m, or where practicable, away from watercourses	▪ Planning of specific refuelling sites, maintenance bays, concrete or bitumen waste containment areas, noting that the Project site will be isolated from external waterways during earthworks construction	Detailed design and construction	To be included in the EMP
		▪ Storage of all chemicals and refuelling of vehicles should be within a suitably sized bund (110% capacity). This should occur away from watercourses and drainage lines, noting that the Project site will be isolated from external waterways during earthworks construction ▪ Ensure appropriately sized and located spill kits are available on site ▪ Ensure spills are cleaned up and disposed of, or remedied immediately, with the necessary equipment and methods	Construction	To be included in the EMP
	Develop and implement emergency control plans to account for fuel, chemical and hydrocarbon spills	▪ Implement emergency control plans in the event of any fuel, chemical or hydrocarbon spills. These plans should be developed prior to construction with actions in place to deal with potentially hazardous releases especially when releases could reach receiving waters.	Detailed design/ construction	To be addressed during detailed design, and requirements to be included in the EMP
	Ensure plant and equipment is maintained adequately	▪ Undertake regular inspections of equipment ▪ Undertake preventative maintenance of equipment	Construction	To be included in the EMP
Soil erosion and sediment entering watercourses after vegetation removal and/or earthworks	Ensure that site inductions cover off on erosion and sediment control and water quality management procedures	▪ During the site induction for all personnel working on site, the Contractor's Environmental Officer should be introduced and Project-related environmental concerns identified and discussed. All site personnel should be taught to recognise erosion and sediment and water quality concerns and understand what needs to be done and who needs to be contacted in the event of an erosion and sediment control failure ▪ All site personnel have a responsibility to contact the BAC Environmental Advisor if any erosion and sediment control failures are identified or when maintenance is required	Pre-construction and as required during construction	To be included in the EMP

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
	Consider the timing of construction and limiting construction to only the areas necessary to be disturbed	■ Development of a construction ESCP which adopts the measures outlined within this table and in Section 5 ■ All materials received for crushing at the Project site must be stockpiled and crushed within the Project site where stormwater is captured and directed to the perimeter drain prior to discharging to the adjacent waterways	Detailed design and construction	Review and comply with the requirements of the measures outlined within this table
Stormwater runoff does not meet WQOs with the potential to impact downstream environments	Implement drainage controls to manage site stormwater runoff	■ A combination of clean water diversion drains/ banks and dirty water (ie sediment-laden) catch drains/banks to be employed on site to manage stormwater runoff. Construction methods and maintenance of clean water diversions and dirty water flow diversion banks and catch drains to be completed as per the IECA (2008) requirements ■ Upon commencement of works, drains will be bunded externally to prevent tidal water ingress for the duration of earthworks construction ■ During Phase 1 works, temporary earthen bunds and temporary pipes with shut off valves will be used to prevent tidal water ingress to the Project site. During Phase 2 works, flap/tidal gates will be installed at the major culverts under Moreton Drive and Nancy Bird Way to prevent backwater from tidal events, storm surges and regional flood events entering the Project site. ■ A perimeter drain will be installed temporarily during construction around the boundary of the Project site and will be developed to its full profile during and after Phase 1 works are completed ■ Storage basins/channels will be progressively installed for flood storage during Stages 2 and 3 of the Phase 1 works. ■ Catch drains to be installed to capture any sediment-laden runoff from disturbed land due to construction works and direct stormwater towards end-of-line sediment control devices ■ Sediment treatment systems and velocity control structures should be installed within the drainage systems ■ Runoff flow velocity should be controlled through the use of a velocity control structure (eg rock check dams) ■ Regularly monitor and maintain drainage control measures ■ Where captured water has a pH less than 6.0, the water is to be treated prior to release and additional lime added to the base and walls of the excavation, as per the ASS Management Plan (refer Appendix F)	Detailed design/ construction	To be included in the EMP

<table>
<tr><th>Potential environmental aspect/impact</th><th>Management objective</th><th>Action</th><th>Phase to be implemented</th><th>Outcome</th></tr>
<tr><td></td><td></td><td>
Adopt recommended drainage design standards outlined below:
<table>
<tr><th rowspan="2">Drainage structure</th><th colspan="3">Anticipated design life</th></tr>
<tr><th>< 12 months</th><th>12 – 24 months</th><th>> 24 months</th></tr>
<tr><td>Temporary drainage structures[1]</td><td>1 in 2 year ARI</td><td>1 in 5 year ARI</td><td>1 in 10 year ARI</td></tr>
<tr><td>Temporary drainage structures (eg catch drain, flow diversion bank) located immediately up-slope of an occupied property that would be adversely affected by the failure or overtopping of the structure[1,2]</td><td>1 in 10 year ARI</td><td>1 in 10 year ARI</td><td>1 in 10 year ARI</td></tr>
<tr><td>Temporary culvert crossing</td><td colspan="3">Minimum 1 in 1 year ARI hydraulic capacity wherever reasonable and practicable</td></tr>
</table>
Notes: [1]Design capacity excludes minimum 150 mm freeboard
[2]Design flow rate based on up-slope drainage structures operating in accordance with their design capacity excluding freeboard, ie any constructed freeboard is assumed to have been washed away or otherwise deactivated
Drain sizes will be sized to carry flows up to a 1 in 100 year ARI, as well as accommodating detention as required
Erosion controls and sediment controls are detailed further in Section 5.6
</td><td></td><td></td></tr>
<tr><td>Runoff entering watercourses from storage and disposal areas including waste material and soil placement</td><td>Prevent construction wastes from entering any watercourse</td><td>Provide adequate disposal facilities for all types of construction waste (refer Section 12)
Stockpile materials away from drainage lines and watercourses</td><td>Construction</td><td>Requirements to be included in the EMP</td></tr>
<tr><td>Litter and rubbish from construction workers and road users entering watercourses</td><td>Prevent litter and rubbish from road users entering watercourses</td><td>Conduct routine checks and removal for litter and rubbish on the road side within the Project site
Provide lidded bins at the site compound</td><td>Construction</td><td>Requirements to be included in the EMP</td></tr>
<tr><td>The use of herbicides for weed control and its impact on runoff and local watercourses</td><td>Avoid excess application of herbicides</td><td>If using herbicides, only apply in accordance with manufacturer’s guidelines and avoid the use of persistent herbicides</td><td>Construction</td><td>Requirements to be included in the EMP</td></tr>
</table>

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Groundwater				
The potential for groundwater contamination from fuel and chemical storage and use, and contamination of exposed groundwater through spills, leaks and surface runoff entering the excavations	Store chemicals according to environmental best practices Avoid leaks and spills of fuels and chemicals and runoff from exposed soil stockpiles	■ Storage of all chemicals and refuelling of vehicles should be within a suitably sized bund (110% capacity), noting that the Project site will be isolated from external waterways during earthworks construction. This should occur away from waterways and drainage lines ■ Ensure appropriately sized and located spill kits are available on site ■ Implement emergency control plans. These should be developed prior to construction with actions in place to deal with potentially hazardous releases especially when releases could reach receiving waters ■ Ensure spills are cleaned up and disposed of, or remedied immediately, with the necessary equipment and methods ■ Soil stockpiles bunds are recommended in addition to those for fuel and chemical storage	Construction	Requirements to be included in the EMP
Reduction of recharge areas by the construction of hard surfaces	Avoid infiltration and groundwater recharge impedance where possible	■ Direct surface water run-off to specifically designed permeable surfaces. Follow the principles of WSUD to promote infiltration of rainfall	Detailed design	To be addressed during detailed design
Infiltration of leachate into local watercourses from stockpiled soil originating from excavations	Avoid leachate generation from exposed soil stockpiles	■ Staging of works to minimise areas of exposed and disturbed soils. Stage vegetation removal and excavation to minimise exposed areas, where possible ■ Collect stormwater runoff from the Project site for treatment and reuse for activities such as damping down exposed surfaces or landscape irrigation where possible ■ Ensure key construction staff are properly trained in sediment and erosion control and groundwater quality protection	Detailed design/ construction	To be addressed during detailed design, and requirements to be included in the EMP

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
The intersection or interaction with the groundwater table and potential impacts to water quality through construction activities, including construction of embankments, or migration of potential contaminants in groundwater	Establish the underlying hydrogeological conditions at points of intersection, particularly in areas of unconsolidated material	■ Construction groundwater monitoring (to assess potential ASS impacts) will need to be undertaken in accordance with the ASS Management Plan (refer Appendix F) and compared to the established baseline monitoring reported by Golders (2016c; d) (refer Appendix D). ■ Groundwater monitoring will be undertaken during filling and until excess surcharge material is removed within the monitoring wells indicated in Figure 7.1 ■ Only wells located adjacent to, or within 50 m laterally of, filling and surcharging activities need to be monitored ■ New groundwater monitoring wells (as shown on Figure 7.1) will be installed progressively around the outer edge of the proposed perimeter drain or flood storage by an appropriately licensed driller in accordance with the requirements of the *Minimum Construction Requirements for Water Bores in Australia* (National Uniform Drillers Licensing Committee 2012) ■ Internal groundwater monitoring wells will be progressively decommissioned as each encroaching earthworks stage progresses ■ Groundwater shall be monitored for PFAS and dissolved metals/metalloids (aluminium, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, zinc and titanium (if required)): – Monthly during placement of fill and surcharge activities for a period of six months or until results of monitoring stabilise over a three month period (and provided that performance limits have been met, and continue to be met) – Once every six months for the remainder of fill placement and surcharge activities (provided that performance limits continue to be met) – Once every six months for removal of surcharge and completion of earthworks (provided performance limits remain to be met) ■ Upon completion of surcharging and earthworks, groundwater monitoring will cease with no further actions required ■ Should potential contamination be identified during groundwater monitoring, an investigation must be undertaken to determine the potential source and extent of the contamination of the groundwater in consultation with the BAC Environment Advisor	Construction	Requirements to be included in the EMP

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
		■ Groundwater shall be monitored for ASS: – For one round of baseline data upon installation of any new groundwater wells prior to construction commencing – Monthly during placement of fill and surcharge earthworks for field measurements and every two months for laboratory analysis – Monthly during surcharging activities for field measurements for the initial two months and monthly until groundwater level has stabilised, and every two months for laboratory analysis for at least six months and until results of monitoring stabilise over a four month period ■ For assessment of potential ASS impacts, samples should be analysed for: – Field measurements: water level, pH, electrical conductivity, redox potential, total alkalinity – Laboratory analysis: pH, electrical conductivity, total titratable acidity, total alkalinity, dissolved iron and aluminium, dissolved ions (chloride and sulphate)		

8 Air quality, odour and dust management

8.1 Introduction

This section investigates the potential impacts of the Project on local air quality and discusses appropriate mitigation measures for management of these potential impacts.

8.2 Methodology

A review of the legislative requirements in relation to air quality and dust management was undertaken. This review identified the relevant air quality goals for the Project site.

Existing air quality data relevant to the Project site was sourced from the EHP air quality monitoring site at Wynnum, approximately 6 km south east of the Project site. Climate data relevant to the Project site was sourced from the Bureau of Meteorology's (BoM) Brisbane Airport site to identify climatic conditions currently experienced within and surrounding the Project site.

This data has been used to assist with the assessment of the potential impacts to air quality as a result of the Project during construction and operation.

8.3 Legislative requirements

A review of the legislative requirements for air quality and dust management was undertaken. This identified the relevant air quality goals for the Project site.

The following legislation related to air quality is potentially relevant to the Project:

- AEPR – Schedule 1, Part 2 of the AEPR outlines the ambient air quality objectives for airport land. The indicators relevant to airport land include lead, photochemical oxidants, sulphur dioxide, total suspended particulates, nitrogen dioxide, sulfates and carbon monoxide.
- Air NEPM – Schedule 2 of the Air NEPM outlines national ambient air quality standards for carbon monoxide, ozone, sulphur dioxide, nitrogen dioxide, lead and particles. The standards were designed to give an 'average' representation of general air quality. That is, the NEPM monitoring protocol was not designed to apply to the monitoring or modelling of peak concentrations from major emissions sources (NEPC 2003).
- Air Toxics NEPM – Schedule 3 of the Air Toxics NEPM outlines monitoring investigation levels for five air toxins including benzene, formaldehyde, benzo(a)pyrene as a marker for polycyclic aromatic hydrocarbons, toluene and xylenes
- EPP (Air) – Schedule 1 of the EPP (Air) specifies air quality indicators and goals for Queensland to protect environmental values. The EPP (Air) provides a more comprehensive list of air quality goals compared with the AEPR and Air NEPM.

8.4 Air quality standards

The applicable air quality goals are provided in Table 8.1 below. For the purposes of this Project, the most stringent air quality standards and goals for each pollutant have been highlighted in bold font.

Table 8.1 Air quality goals relevant to this Project

Pollutant	Goal	Averaging period	Legislative instrument
Carbon monoxide (CO)	**10 mg/m^3 or 9 ppm**	8 hours	AEPR
	9 ppm	8 hours[1]	Air NEPM
	11 mg/m^3 or 9 ppm	8 hours[1]	EPP (Air)
Nitrogen dioxide (NO_2)	320 µg/m^3 or 0.16 ppm	1 hour	AEPR
	0.12 ppm	1 hour[1]	Air NEPM
	0.03 ppm	1 year	
	250 µg/m^3 or 0.12 ppm	1 hour[1]	EPP (Air)
	62 µg/m^3 or 0.03 ppm	1 year	
Photochemical oxidants (as ozone)	**210 µg/m^3 or 0.10 ppm**	1 hour	AEPR
	170 µg/m^3 or 0.08 ppm	4 hours	
	0.10 ppm	1 hour[1]	Air NEPM
	0.08 ppm	4 hours[1]	
	210 µg/m^3 or 0.10 ppm	1 hour[1]	EPP (Air)
	160 µg/m^3 or 0.08 ppm	4 hours[1]	
Particulate matter less than 10 µm (PM_{10})	N/A	N/A	AEPR
	50 µg/m^3	1 day[2]	Air NEPM
	50 µg/m^3	24 hours[2]	EPP (Air)
Particulate matter less than 2.5 µm ($PM_{2.5}$) (advisory* only)	N/A	N/A	AEPR
	25 µg/m^3	1 day	Air NEPM
	8 µg/m^3	1 year	
	25 µg/m^3	24 hours	EPP (Air)
	8 µg/m^3	1 year	
Total suspended particulates	**90 µg/m^3**	1 year	AEPR
	N/A	N/A	Air NEPM
	90 µg/m^3	1 year	EPP (Air)
Sulfur dioxide (SO_2)	**700 µg/m^3 or 0.25 ppm**	10 minutes	AEPR
	570 µg/m^3 or 0.20 ppm	1 hour	
	60 µg/m^3 or 0.02 ppm	1 year	
	0.20 ppm	1 hour[1]	Air NEPM
	0.08 ppm	1 day[1]	
	0.02 ppm	1 year	
	570 µg/m^3 or 0.20 ppm	1 hour[1]	EPP (Air)
	230 µg/m^3 or 0.08 ppm	1 day[1]	
	57 µg/m^3 or 0.02 ppm	1 year	
Lead	1.5 ppm	3 months	AEPR
	0.50 µg/m^3	1 year	Air NEPM
	0.50 µg/m^3	1 year	EPP (Air)

Pollutant	Goal	Averaging period	Legislative instrument
Benzene	N/A	N/A	AEPR
	0.003 ppm^	1 year#	Air Toxics NEPM
	10 µg/m^3 or 0.003 ppm	1 year	EPP (Air)
Benzo(a)pyrene as a marker for Polycyclic Aromatic Hydrocarbons	N/A	N/A	AEPR
	0.3 ng/m^3^	1 year#	Air Toxics NEPM
	0.3 ng/m^3	1 year	EPP (Air)
Formaldehyde	N/A	N/A	AEPR
	0.04 ppm^	24 hours	Air Toxics NEPM
	54 µg/m^3 or 0.04 ppm	24 hours	EPP (Air)
Toluene	N/A	N/A	AEPR
	1 ppm	24 hours	Air Toxics NEPM
	0.1 ppm	1 year#	
	4.1 mg/m^3 or 1 ppm	24 hours	EPP (Air)
	410 µg/m^3 or 0.1 ppm	1 year	
Xylene (as total of ortho, meta and para isomers)	N/A	N/A	AEPR
	0.25 ppm	24 hours	Air Toxics NEPM
	0.2 ppm	1 year#	
	1.2 mg/m^3 or 0.25 ppm	24 hours	EPP (Air)
	950 µg/m^3 or 0.2 ppm	1 year	

Table notes:
[1] One day per year maximum allowable exceedance
[2] Five days per year maximum allowable exceedances
For the purposes of this Air Toxics NEPM, the annual average concentrations in the "Goal" column are the arithmetic mean concentrations for 24-hour monitoring results.
^ 8-year goal is to gather sufficient data nationally to facilitate development of a standard.
* An Advisory Reporting Standard means a health-based standard to assess the results of monitoring for particles as $PM_{2.5}$. These standards do not have a timeframe for compliance associated with them.

There are no national air quality guideline values for nuisance dust deposition to assess the impact of dust on the receiving environment. However, as per the *Guideline: Application requirements for activities within impacts to air* (EHP 2017e), a dust deposition limit of 120 mg/m^2/day is typically used in Queensland, when monitored in accordance with AS3580.10.1:2003. This can be normalised to a 30 day month to give a monthly dust deposition limit of 3.6 g/m^2/month.

8.5 Existing environment

8.5.1 Review of existing data

The Project site is located in close proximity to major road corridors such as the Gateway Motorway, Airportlink M7 tunnel, and Moreton Drive as well as some of Brisbane's major industrial precincts which include oil refineries, chemical manufacturers and the Port of Brisbane (BAC 2014b). Based on reporting from the National Pollutant Inventory, Table 8.2 details sources of air quality emissions that are located within 3 km of the Project site.

Given that these industrial facilities and road corridors discharge various pollutants into Brisbane's airshed and are in close proximity to the Project site, the air quality at Brisbane Airport would be influenced by these adjacent industries and activities as well as by emission sources associated with the operation of Brisbane Airport.

Table 8.2 Emission sources within 3 km of Project site (based on 2014/2015 emissions)

Facility name	Suburb
Bradken CMS Northgate	Northgate
Qantas Airways, Brisbane Airport	Brisbane
Brisbane Airport Corporation	Brisbane Airport
BOC Limited, Bulwer Island	Pinkenba
GE Water & Process Technologies	Northgate
James Hardie Concrete Pipes	Meeandah
Pinkenba Malthouse	Pinkenba
Shell Service Station, Brisbane Airport	Eagle Farm
Pinkenba Terminal, Viva Energy	Pinkenba

Source: Department of the Environment 2015

8.5.2 Receptors potentially sensitive to air quality changes

Figure 8.1 shows the location of receptors that are in close proximity to the Project site and would have the potential to be sensitive to changes in air quality.

The closest commercial receptors are:

- Kingsford Smith Memorial and Southern Cross Aircraft (95 m north east)
- Tenancies along Nancy Bird Way, such as:
  - Brisbane Airport Services Centre (directly across Nancy Bird Way), including:
    - Shell Coles Express
    - McDonalds and other food outlets
    - Vehicle servicing precinct – Ultra Tune, Sparkles Car Wash
  - Thrifty Car Rental and Hire
  - CPA Remote Public Car Park (directly across Moreton Drive)
- Tenancies along Bert Hinkler Drive, such as:
  - CPA Staff Car Park Stages 1 and 2
  - CPA Staff Car Park Stages 3 and 4 (under construction)
  - Taxi, bus and limousine parking
- Tenancies along Ivy May Way such as:
  - Europcar Car Rental
  - Avis Car Rental
  - Budget Car Rental
  - Hertz Car Rental
  - Qantas Valet Storage Facility
- Tenancies within the International Terminal (across Airport Drive), such as:
  - Airtrain services
  - Secure car parking
  - International Terminal lounge, food and shopping outlets
- Commercial tenancies along Qantas Drive (across Airport Drive)

The nearest residential suburbs are Eagle Farm (1.25 km south west of the Project site) and Hendra, Nundah, Northgate and Banyo, which are located more than 2 km west and north of the Project site. The nearest sensitive receptors to the Project site include:

- Northgate State School (2.6 km west)
- Hendra State School (2.75 km south west)
- Novotel Hotel (1.8 km south west)
- Tadpoles and Joey Club Childcare Centre (2.1 km south west)
- Pullman and Ibis Hotel (1.5 km north) (under construction)

8.5.3 Air quality data

As indicated in Section 8.5.2 above, the Project is located in the vicinity of areas currently used or under development for general industry and commercial uses. The local airshed is influenced predominantly by the road network connecting these activities and by the operation of the airport itself.

Caltex Refineries (Qld) Ltd operate three air quality monitoring sites in Wynnum to assess the impact of refinery emissions on nearby sensitive receptors. The oldest of the air quality sites commenced operation in 2004 and the two additional sites were added to the network in March 2014. This air quality monitoring network is located approximately 5 km south east of the Project site.

Air quality indicators monitored at the Wynnum sites include nitrogen oxides, sulphur dioxide, PM_{10} and $PM_{2.5}$. A summary of the monitored pollutant concentrations from Wynnum between December 2014 and November 2016 is presented in Table 8.3, together with the AEPR, Air NEPM and EPP (Air) guidelines and indicators.

Table 8.3 Air quality data from Wynnum air quality network December 2014 to November 2016

Parameter	AEPR	Air NEPM	EPP (Air)	Averaging period	Maximum pollutant concentration at Wynnum network	Exceedances at Wynnum network
Nitrogen dioxide	0.12 ppm	0.12 ppm	250 µg/m^3 0.12 ppm	1 hour	0.041 ppm (July 2016)	0
	0.03 ppm	0.03 ppm	62 µg/m^3 0.03 ppm	1 year	-	N/A
Sulfur dioxide	0.20 ppm	0.20 ppm	570 µg/m^3 0.2 ppm	1 hour	0.134 ppm (April 2015)	0
	0.08 ppm	0.08 ppm	230 µg/m^3 0.08 ppm	1 day	0.049 ppm (December 2014)	0
	0.02 ppm	0.020 ppm	57 µg/m^3* 0.02 ppm	1 year	-	N/A
PM_{10}	50 µg/m^3	50 µg/m^3	50 µg/m^3	1 day	44.6 µg/m^3 (April 2015)	0
$PM_{2.5}$	-	25 µg/m^3	25 µg/m^3	1 day	19.6 µg/m^3 (September 2016)	0
	-	8 µg/m^3	8 µg/m^3	1 year	-	N/A

Table notes:
* Health and biodiversity of ecosystems
Source: Department of Science, Information Technology and Innovation 2017

According to the results in Table 8.3, the existing air quality adjacent to the Brisbane Airport at Wynnum is considered acceptable and within nominated standards. However, it should be noted that the recorded maximum pollutant concentration for PM_{10} (44.6 µg/m^3) was close to the PM_{10} standard of 50 µg/m^3.

8.5.4 Climatic conditions

BoM operates a meteorological site at Brisbane Airport (040842). This meteorological site is located approximately 2.3 km north east of the Project site. Table 8.4 summarises the long term average climate data recorded for the meteorological site.

Table 8.4 Meteorological data for Brisbane Airport (040842)

Parameter	January	February	March	April	May	June	July	August	September	October	November	December	Annual average
Max temp (°C)	29.0	29.0	28.0	26.0	23.6	21.2	20.9	21.9	24.2	25.5	26.9	28.1	25.4
Min temp (°C)	21.3	21.1	19.6	16.4	12.9	10.7	9.1	9.8	12.8	15.6	18.3	20.1	15.6
Rainfall (mm)	136.4	118.4	98.5	79.2	104.2	69.7	28.9	40.1	34.7	69.5	97.7	126.3	1049
9am wind speed (km/hr)	15.5	14.3	14.3	14.5	15.7	15.6	16.3	15.3	15.0	15.5	16.2	16.2	15.4
3pm wind speed (km/hr)	23.3	21.2	20.8	18.8	16.7	16.5	17.8	20.4	24.0	25.3	24.8	24.7	21.2

Source: Bureau of Meteorology 2017

The data in Table 8.4 indicates that rainfall within the Project site and surrounding areas occurs predominantly during summer (December to February), with the highest average occurring during January. The lowest rainfall months are June to September, with July having the lowest monthly average of 28.9 mm. The highest average monthly maximum temperature was 29.0°C (recorded in January and February) while the lowest average monthly maximum temperature was 20.9°C (recorded in July). The highest average monthly minimum temperature was 21.3°C (recorded in January), while the lowest average monthly minimum temperature was 9.1°C (recorded in July).

The average wind speeds at 9.00 am are approximately:

- 15.3 km/hr during summer months (December – February)
- 14.8 km/hr during autumn months (March – May)
- 15.7 km/hr during winter months (June – August)
- 15.6 km/hr during spring months (September – November)

The average wind speeds at 3.00 pm are approximately:

- 23.1 km/hr during summer months (December – February)
- 18.8 km/hr during autumn months (March – May)
- 18.2 km/hr during winter months (June – August)
- 24.7 km/hr during spring months (September – November)

Wind rose data was obtained from the BoM at Brisbane Airport (040842) and is presented in Figures 8.2 and 8.3. The predominant wind direction at 9.00 am during summer is northerly and then south-easterly and predominantly south-westerly during winter (refer Figure 8.2). At 3.00 pm, the winds are predominantly northerly/north-easterly, with some south-easterly winds in summer, while winds are predominantly north-easterly to south-easterly during winter (refer Figure 8.3).

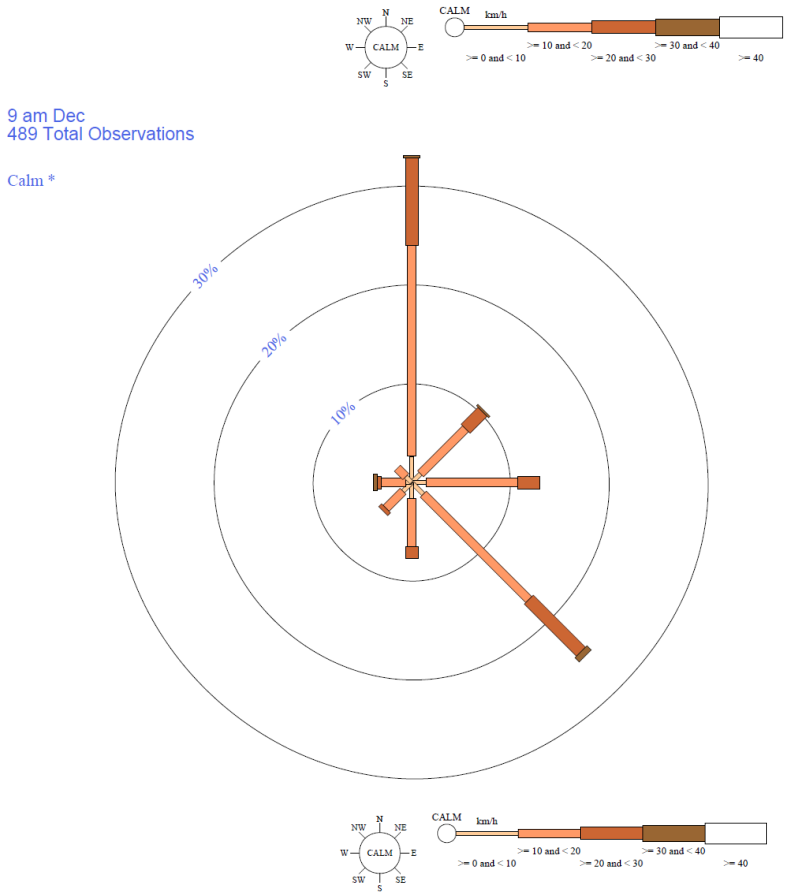

Figure 8.2 December (summer) and July (winter) wind roses at 9 am for Brisbane Airport (040842) (based on data from 1 April 1994 to 30 September 2010) (BoM 2017)

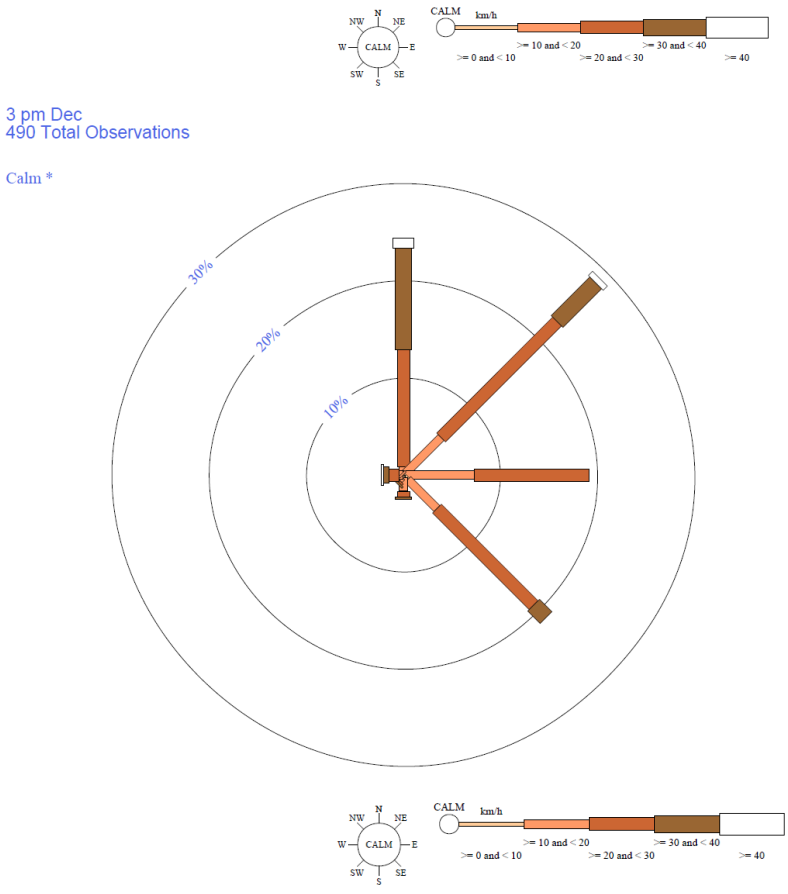

Figure 8.3 **December (summer) and July (winter) wind roses at 3 pm for Brisbane Airport (based on data from 1 April 1994 to 30 September 2010) (BoM 2017)**

8.6 Potential impacts

Construction activities will potentially generate dust impacts. Activities with the potential to generate dust include:

- Transporting of fill material to site
- Processing of fill (crushing and screening)
- Stockpiling of fill
- Loading of fill onto trucks for placement
- Transport of fill around the site for placement
- Placing of fill on site
- Minor excavation works
- Removal of vegetation
- Construction of embankments
- Drain upgrade and realignment earthworks

Dust generation, resulting from construction earthworks (eg vegetation clearing, traffic movement over bare surfaces and rock crushing activities), has the potential to impact on the Kingsford Smith Memorial, neighbouring commercial businesses, car rentals and parking and the International Terminal if mitigation measures are not implemented. It is considered that the car rental, valet tenancies and car wash are likely to be sensitive to air quality changes, given their proximity to the Project site and the nature of their business (ie supplying cars that customers expect to be clean).

Wind speeds are noticeably higher during the afternoon in both spring and summer, with the potential to cause airborne dust from stockpiles and exposed areas during construction and to carry dust generated from rock crushing and screening. Dust suppression measures would need to be applied, particularly in high wind conditions.

Wind direction at Brisbane Airport is generally from the north, north-east and south-east at speeds between 20 and 30 km/h but up to 40 km/h, particularly in the afternoon. However, between April and September, wind direction at 9am at Brisbane Airport is predominately from the south west (20 to 30 km/h). Morning activities during these months may have an increased risk from dust deposition on the Kingsford Smith Memorial, which is located north-east of the Project site.

During settlement, there is the potential for dust to be generated if fill areas are not adequately covered.

Monitoring was undertaken monthly on a similar project at the CPA Staff Carpark, including the Western Drain upgrade and Stage 3 bulk earthworks from October 2015 until October 2016. Dust deposition rates during this period ranged from 0.8 to 6.4 g/m^2/month, with an average of 2.19 g/m^2/month (PSK 2016). There was only one instance of dust deposition above the Queensland dust deposition limit of 3.6 g/m^2/month, which occurred in October/November 2015 (PSK 2016). These results indicate that these types of Projects can be managed to comply with the Queensland dust deposition limit.

Dust deposition monitoring was conducted at the Kingsford Smith Memorial from October 2008 to September 2009 during the Brisbane Airport Northern Access Road Project (eg Nancy Bird Way), which is directly adjacent to the Memorial. Dust deposition results from inside the Kingsford Smith Memorial ranged from 0.8 to 4.6 g/m^2/month while results collected from outside the Kingsford Smith Memorial ranged from 1.7 to 8.9 g/m^2/month. No complaints were received during the Northern Access Road Project regarding the Kingsford Smith Memorial.

There is the potential for construction and operation-related traffic to contribute towards minor local air quality issues (other than dust impacts). The impact on local air quality during construction traffic will not be significant given the temporary nature of construction and the existing emissions from the high volume of vehicles currently using nearby roads such as Moreton Drive, Airport Drive and Nancy Bird Way.

It is considered that residential areas and sensitive receptors are a sufficient distance away from the Project site and will not experience any air quality impacts as a result of the Project.

It is envisaged that minimal impacts associated with climatic patterns will occur during the operation of the Project.

8.7 Mitigation measures

Table 8.5 provides management measures that are recommended to mitigate the potential impacts identified above.

Table 8.5 Potential air quality impacts and mitigation measures

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Reduced air quality at nearby commercial premises (dust and particulate generation) from construction related activities	Undertake baseline dust monitoring program for the Project	■ Undertake baseline dust deposition monitoring prior to construction, involving the following: – Install dust deposition gauges at five locations (refer Figure 7.1): ■ Kingsford Smith Memorial ■ International Terminal car park ■ North of Qantas Engineering on Qantas Drive ■ Along the south eastern boundary of the CPA Remote Car Park ■ Brisbane Airport Services Centre – Collect and replace dust deposition gauge sample bottles on a monthly basis for three months starting no less than two weeks before construction. – Dust deposition gauge preparation, sample collection and sample analysis should be conducted in accordance with: ■ AS/NZ 3580.10.1:2003 – Methods for Sampling and Analysis of Ambient Air, Method 10.1 Determination of Particulate Matter – Deposited Matter – Gravimetric Method ■ Monitoring and Sampling Manual 2009 (EHP 2009) ■ Dust deposition samples are to be analysed by a National Association of Testing Authorities (NATA) accredited laboratory. Results are to be recorded.	Prior to construction	To be included in the EMP

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
	Undertake construction dust monitoring program for the Project	■ Undertake construction dust deposition monitoring, involving the following: – Install dust deposition gauges at five locations (refer Figure 7.1): ■ Kingsford Smith Memorial ■ International Terminal car park ■ North of Qantas Engineering on Qantas Drive ■ Along the south eastern boundary of the CPA Remote Car Park ■ Brisbane Airport Services Centre (for half of Stage 1 works only, if no validated complaints are received) – Collect and replace dust deposition gauge sample bottles on a monthly basis throughout construction – Dust deposition gauge preparation, sample collection and sample analysis should be conducted in accordance with: ■ AS/NZ 3580.10.1:2003 – Methods for Sampling and Analysis of Ambient Air, Method 10.1 Determination of Particulate Matter – Deposited Matter – Gravimetric Method ■ Monitoring and Sampling Manual 2009 (EHP 2009) ■ Dust deposition samples are to be analysed by a NATA accredited laboratory. Results should be assessed against the advisory limit of 3.6 g/m^2/month, and results provided in a monthly report. ■ If the samples reveal an exceedance of the 3.6 g/m^2/month advisory level, the cause of the exceedance should be investigated. Additional mitigation measures should be investigated and implemented to manage future dust impacts generated by the project if needed	Construction	To be included in the EMP

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Dust and pollutants generated by vehicles travelling on unpaved areas	Minimise local air quality impacts as a result of construction related traffic	■ To minimise the tracking of sediment off site, the Contractor will specify appropriate measures in the ESCP in consultation with the BAC Environmental Advisor ■ Maintain sealed vehicle access points from existing roads to the Project site where possible ■ Cover loads on haulage trucks ■ Stabilisation and regular watering of haul routes and traffic areas within the Project site using water carts to minimise the generation of dust. To further minimise dust generation, chemical dust suppressants, and increased utilisation of water carts and/or fixed irrigation can be used on selected roads to maintain high moisture levels ■ Restrict construction vehicle speed to a speed suitable to avoid the generation of dust ■ Ensure all construction vehicles, plant and machinery are maintained and operated in accordance with design standards and specifications ■ Ensure construction vehicles are switched off when not in use	Construction	To be included in the EMP
Dust generated from exposed areas disturbed by removal of vegetation	Stage clearing of vegetation to minimise the area of exposed ground at any one time	■ Disturb only the minimum area necessary. Reshape, topsoil and rehabilitate completed areas as soon as practicable after the completion of works	Construction	To be included in the EMP
Dust generated by uncovered fill and surcharge material during settlement	Appropriately cover areas that are in the process of settlement	■ Semi-permanent cover (eg hydromulch etc) should be used on areas that are in the process of settlement if considered necessary in consultation with the BAC Environmental Advisor	Construction	To be included in the EMP

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Reduced air quality within surrounding areas (including adjacent tenancies and Kingsford Smith Memorial) due to dust and particulate generated from construction activities	Implement dust suppression/ control measures during construction	▪ Use dust suppression techniques on stockpiles (eg water carts) to reduce the risk of airborne dust as required ▪ If necessary, use a dust suppressant such as Vital Bon-Matt where practical, in consultation with the BAC Environmental Advisor ▪ Use temporary cover (ie black plastic, turf, jute matting etc) where necessary to avoid the potential for wind-blown dust during construction, in consultation with the BAC Environmental Advisor ▪ Monitor prevailing meteorological conditions, including wind speed and direction during construction, excavation and fill works and postpone works if dust impacts on sensitive receptors cannot be appropriately managed ▪ Undertake daily visual inspections for airborne dust	Construction	To be included in the EMP
	Adoption of management measures to reduce fire-related dust generation	▪ No fires on site ▪ In accordance with the ESCP, cleared vegetation may be reused as mulch on site for erosion and sediment control. Cleared vegetation is not to be burned	Construction	To be included in the EMP
Complaints from adjacent tenants regarding air quality	Implement a complaints register system	In the event of an air quality complaint, undertake the following measures: ▪ Investigate the cause of the complaint through consultation with the complainant. Review and log the type, location and duration of site activity and meteorological conditions at the time of the complaint ▪ Where the complaint is validated, analyse the results of the air quality monitoring and use this data to assist with the assessment of the impacts and in the development and implementation of appropriate work procedures or mitigation measures to minimise further impacts ▪ Within 14 days of the receipt of a validated air quality complaint, report the results of the investigation and the actions taken to 'close out' the complaint to the complainant and BAC Environmental Advisor	Construction	Requirement to be included in the EMP

9 Noise and vibration

9.1 Introduction

This section outlines the potential issues relating to noise and vibration associated with the Project and discusses appropriate mitigation measures to be undertaken during the construction stages.

9.2 Methodology

A review of the relevant legislative and policy instruments relating to noise and vibration control during construction was undertaken, identifying the applicable standards to be applied to the Project. An assessment of the existing environment was based on a desktop review of nearby sensitive receptors and previous noise and vibration studies for similar projects. Potential noise and vibration impacts were identified and mitigation measures recommended.

9.3 Relevant legislation

Legislation relevant to the Project is summarised in Section 3 of this EAR. The specific provisions relating to noise and vibration management are discussion the section below.

9.3.1 Airports (Environment Protection) Regulations 1997

9.3.1.1 Noise sources

Ground-based noise on the airport site other than noise generated by an aircraft in flight, when landing, taking off or taxiing at an airport, is regulated by the AEPR. The ground-based noise sources surrounding the Project site have been identified in the AES as the following:

- Road traffic and rail
- Construction and development sites
- Operation of plant or machinery
- Operation of alarm or warning systems
- Aircraft engine ground running

9.3.1.2 Sensitive receptors

Part 2, Division 2, Regulation 2.04 of the AEPR defines sensitive receptors as follows:

(a) Dwelling

(b) An impermanent dwelling in a place designed, or reserved, for impermanent dwellings (for example, a caravan park or residential marina)

(c) A hotel, motel or hostel

(d) A child care institution, kindergarten, school, college, university or other educational institution

(e) A hospital, medical centre or nursing home

(f) A building that is a church or similar place of worship

Schedule 4, Part 3 of the AEPR also makes reference to commercial receptors, and states that the indicators of noise for sensitive receptors are the same for commercial receptors except for considerations of the following factors:

- *The nature of the business conducted at the site*
- *The time of day when the noise occurs*
- *The duration of the noise*
- *The nature and characteristics (if any) of the noise*
- *The background noise level*

9.3.1.3 Construction noise criteria

Applicable standards to be applied to the Project have been identified. The applicable noise criteria for road traffic and construction noise are found in the AEPR and are summarised in Table 9.1.

Table 9.1 Applicable noise criteria for construction and road traffic noise

Noise source	Noise criteria	Note
Construction (construction, maintenance or demolition of a building or other structure at an airport)	$L_{A10(15\ minute)}$ 75 dBA	Assessed at the site of a sensitive receptor Adjusted for tonal character or impulsiveness
Road traffic (generated from road traffic on the site of an operator of an undertaking at an airport)	$L_{Aeq(24\ hour)}$ 60 dBA	Assessed at the site of a sensitive receptor
	$L_{Aeq(8\ hour)}$ 55 dBA	Assessed at the site of a sensitive receptor Assessed between 22:00 and 06:00 hours

9.3.2 BAC's Noise Impact Assessment Policy

BAC's *Noise Impact Assessment Policy* (NIAP) (2009) sets out how various noise impacts should be considered when determining the level of noise assessment and any suitable mitigation measures required for new developments.

BAC is committed to applying this policy to ensure each proposed development on-airport is appropriately assessed for potential noise impacts. The NIAP applies to new development sites on airport land, and takes account of potential noise generated during construction and operation phases, as well as the way existing noise sources impact on those proposed new developments.

The NIAP recommends that an historical examination of noise levels and its effect on its neighbours can be used as an appropriate assessment mechanism where a proposed development is:

- Consistent with other existing land uses in the precinct and will not affect sensitive receptors, or
- Not consistent with other existing land uses in the precinct but the likely noise impacts would not be significantly greater than existing precinct noise levels and would not impact on sensitive receptors

In all other cases, a noise assessment study (prepared by qualified noise consultants) is to be undertaken.

The Project is considered to be consistent with other existing land uses in the precinct and will not affect sensitive receptors during operation. The bulk earthworks phase of the Project will generate noise from material processing (eg earth, rock), including sorting, crushing, processing and stockpiling. An assessment of noise related impacts from these activities is provided in Section 9.5.

9.3.3 Vibration

No vibration related goals are discussed in the AEPR. The Australian Standard *AS 2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites* also does not provide vibration goals. However, it provides guidance on how vibration control should be undertaken on construction sites.

AS 2436-2010 recommends implementing time restrictions on processes involving exposure to potentially hazardous vibration, low-vibration plant and equipment, and signposting of vibration hazardous areas. Monitoring is identified in AS 2436-2010 as an essential component in the effective control of vibration from construction sites.

The *Guideline: Noise and vibration from blasting* (EHP 2016c) provides vibration criteria for construction blasting with a peak velocity for ground vibration set at 5 mm/s. Whilst no blasting will be conducted as part of Project works, the vibration criteria provide a vibration limit that can be implemented at the nearest sensitive structure (Kingsford Smith Memorial). This criteria is well below levels at which structural damage will occur. Vibrations below this criteria are unlikely to cause cosmetic cracking, including minor non-structural effects such as superficial cracking in cement render or plaster.

9.4 Existing environment

9.4.1 Noise

9.4.1.1 Regional context and sensitive receptors

The Project site is a high noise environment and is exposed to high levels of daytime background noise from the following sources:

- Vehicular traffic on Moreton Drive, Airport Drive and Nancy Bird Way
- Low-flying aircraft during the land-take-off cycle
- Intermittent noise from surrounding construction activities (eg CPA)

The closest commercial receptors include:

- Kingsford Smith Memorial and Southern Cross Aircraft (95 m north east)
- Tenancies along Nancy Bird Way, such as:
  - Brisbane Airport Services Centre (approximately 50 m north, directly across Nancy Bird Way), including:
    - Shell Coles Express
    - McDonalds and other food outlets
    - Vehicle servicing precinct – Ultra Tune, Sparkles Car Wash
  - Thrifty Car Rental and Hire
  - CPA Remote Public Car Park (approximately 120 m north west, directly across Moreton Drive)
- Tenancies along Bert Hinkler Drive, such as:
  - CPA Staff Car Park Stages 1 and 2
  - CPA Staff Car Park Stages 3 and 4 (under construction)
  - Taxi, bus and limousine parking
- Tenancies along Ivy May Way such as:
  - Europcar Car Rental
  - Avis Car Rental
  - Budget Car Rental
  - Hertz Car Rental
  - Qantas Valet Storage Facility
- Tenancies within the International Terminal (across Airport Drive), such as:
  - Airtrain services

  - Secure car parking
  - International Terminal lounge, food and shopping outlets
- Commercial tenancies along Qantas Drive (across Airport Drive)

The nearest residential suburbs are Eagle Farm (1.25 km south west of the Project site) and Hendra, Nundah, Northgate and Banyo, which are located than 2 km west and north of the Project site. The nearest sensitive receptors to the Project site include:

- Northgate State School (2.6 km west)
- Hendra State School (2.75 km south west)
- Novotel Hotel (1.8 km south west)
- Tadpoles and Joey Club Childcare Centre (2.1 km south west)
- Pullman and Ibis Hotel (1.5 km north) (under construction)

Figure 8.1 identifies the location of these potentially sensitive receptors.

9.4.1.2 Review of existing data

Existing background noise data from the Parallel Runway EIS/MDP (BAC 2006) has been used as an indication of the current background noise levels within proximity to the Project site. Ambient noise levels at a number of locations surrounding the airport site in November 2005 were recorded.

The nearest locations with background noise data to the Project site are:

- St Paul's Theological College (2.5 km north west) – recorded distant traffic and birds
- 33 Franklin Street, Nundah (2.45 km west) – recorded distant traffic, insects, birds and occasional local traffic
- 17 McBride Road, Pinkenba (2.6 km south east) – recorded birds, insects, children, animals and aircraft noise

The ambient noise levels recorded as part of studies for the Parallel Runway EIS/MDP relevant to the current Project site are outlined in Table 9.2.

It is noted that the Parallel Runway EIS/MDP considered these noise levels to be typical for these areas (BAC 2006).

Table 9.2 Summary of measured noise levels

Site	min$L_{A90,1hr}$ (dBA)			$L_{Aeq,Period}$ (dBA)		
	Daytime 7 am-6 pm	Evening 6-10pm	Nightime 10 pm-7 am	Daytime 7 am-6 pm	Evening 6-10 pm	Nightime 10 pm-7 am
St Paul's Theological College (Educational facility)	36	33	30	56	51	44
33 Franklin Street, Nundah (residential property)	44	42	36	57	50	49
17 McBride Road, Pinkenba (residential property)	42	37	34	57	52	51

Source: BAC 2006

9.4.2 Vibration

Vibration monitoring inside the Kingsford Smith Memorial was conducted during the construction works at the Brisbane Airport Northern Access Road Project (eg Nancy Bird Way) during various vibration inducing works (eg roller operation, pile driving). Table 9.3 details the results from the vibration monitoring. The maximum vibration result was detected at -1.1 mm/s, significantly below the recommended vibration criteria (5 mm/s). This maximum result was detected during setup of the vibration monitor and is likely to be attributed to the set up process as it is unusually high (Leighton Contractors 2009).

Table 9.3 Vibration results during Brisbane Airport Northern Access Road Project

Monitoring period	Maximum vibration detected (mm/s)
24 March to 5 April 2009	0.4
17 to 19 April 2009	0.4
28 to 30 April 2009	Not detected
25 to 26 May 2009	0.05
7 to 15 July 2009 and 20 to 26 July 2009	-1.1

9.5 Potential impacts

9.5.1 Potential noise impacts

The Project may undertake a 24 hour earthwork operations as well as material processing, including sorting, crushing, screening and stockpiling.

Sources of construction noise during the Project will comprise a range of heavy vehicles, plant and equipment, and typically occurs intermittently and varies depending upon the nature or phase of construction (ie land clearing, excavation etc). In general, the site clearance and earthworks activities can be viewed as an intense activity of work over a short timescale in the Project site. These works are unlikely to be in the same vicinity for more than a few days at a time.

Rock crushing may be undertaken during the bulk earthworks. The location for rock crushing would be chosen based on distance to material, accessibility of trucks and location of neighbouring receptors, such as the Kingsford Smith Memorial.

Based on the typical sound power levels for construction sources, noise level predictions have been undertaken assuming all listed equipment is operating simultaneously at 100% capacity (ie worst case scenario). This conservative assessment is shown in Table 9.4 below.

Table 9.4 Noise level predictions

Activity	Equipment	No. of items in one 15 min period	Typical Sound Power Level (mid-point) (dBA)		Calculated construction noise levels, $L_{Aeq,15\ mins}$ dB(A) at distance:							
			Individual item	Total item	25m	50m	100m	200m	400m	500m	800m	1km
Bulk earthworks with rock crushing	Rock breaker	1	118	118	82	76	70	64	58	56	52	50
	Bulldozers/ tracked loaders	2	108	111	75	69	63	57	51	49	45	43
	Excavators	3	107	112	76	70	64	58	52	50	46	44
	Dump trucks	4	117	123	87	81	75	69	63	61	57	55
	Drum rollers	3	108	113	77	71	65	59	53	51	47	45
	Articulated truck	1	107	107	71	65	59	53	47	45	41	39
	Water trucks	2	107	110	74	68	62	56	50	48	44	42
Cumulative noise from all equipment in dB(A)					89	83	77	71	65	63	59	57
Overall noise level (+*10 dB penalty for annoying characteristics*) in dB(A)					99	93	87	81	75	73	69	67
Expected noise exceedance (against 75 dBA*)**:**					**24**	**18**	**12**	**6**	0	-2	-6	-8

Table notes:
The *Guideline: Planning for noise control* (EHP 2016c) states that 5 dBA penalty each should be applied for impulsiveness and reverse beeping
*As per the AEPR, noise generated from construction of a structure at an airport should not exceed 75 dBA at the site of a sensitive receptor (refer Table 9.1)

The closest receptors to the Project site, where the most noise is likely to be experienced given the combination of activities and potential for rock processing, are outlined in Section 9.4.1 and include the Kingsford Smith Memorial, the Brisbane Airport Services Centre and the CPA. While there is potential for the Project to exceed the AEPR criteria at these locations, as they are all located within 100 m of the Project site (refer Table 9.4), this information is conservative and peak noise levels would occur only sporadically since not all equipment would be operating at all times and mitigation measures will be put in place. Based on this, it is likely that potential impacts to these receptors from Project works can be managed with appropriate mitigation measures outlined in Table 9.6.

It is considered that the residential areas (Eagle Farm, Hendra, Nundah, Northgate and Banyo) are a sufficient distance away from the Project site and will not experience any noise impacts as a result of the Project.

Noise impacts may also be associated with construction vehicle traffic. Traffic due to workforce movements and delivery of materials will increase the ambient noise levels on site and adjoining access routes. However it is not expected that any change in noise will be noticeable given that access routes are currently busy road corridors.

9.5.2 Potential vibration impacts

Ground vibration resulting from the construction works will mainly be associated with the excavation/compacting for earthworks and rock crushing activities. The major vibration sources will include the operation of bulldozers, excavators, vibratory rollers (if used) and the rock crushing equipment.

The ground vibration levels due to construction work are difficult to be predicted accurately due to the dependence of vibration transmissibility on soil type (soft or hard), intervening geology (ie the coupling loss between the soil and the building foundation), the nature of the building foundations and the location of the construction equipment.

The nearest potential affected properties are outlined in Section 9.4.1 and include the Kingsford Smith Memorial, the Brisbane Airport Services Centre and the CPA. At these receptors, there may be occasions when vibration is perceptible during intensive earthworks.

An example of predicted ground vibrations at various distances was made by GHD and the Roads Traffic Authority (RTA) (now Roads and Maritime Services [RMS]) (GHD and RTA 2014) using data from the Environmental Noise Management Manual (RTA 2001). This data, shown in Table 9.5 below, provides an example of the levels of ground vibration that could be expected during construction of the Project.

Table 9.5 Typical vibration levels at distances (mm/s peak)

Plant item	Distance from source			
	10 m	20 m	50 m	100 m
15 t roller	7 to 8	3.8	1.5	0.8
7 t compactor	5 to 7	3.0	1.2	0.6
Dozer	2.5 to 4	1.6	0.7	0.3
Backhoe	1.0	0.5	0.2	0.1

Source: GHD and RTA 2014

As discussed in Section 9.5.1, the Kingsford Smith Memorial, Brisbane Airport Services Centre and Central Parking Area are located within approximately 100 m of the Project site boundary. At a distance of 20 m, construction vibration levels for a 15 t roller and a dozer are in the order of 3.8 mm/s and 1.6 mm/s peak respectively, which are below the 5 mm/s limit recommended in Section 9.3.3.

Vibration monitoring was conducted at the Kingsford Smith Memorial during the Northern Access Road Project and detected a maximum vibration result of -1.1 mm/s (Leighton Contractors 2009). This result is significantly below the recommended vibration criteria (5 mm/s). Piling activities and vibratory rollers were used in closer vicinity of the Kingsford Smith Memorial during the Northern Access Road Project. However, the Project will not involve piling, vibratory rollers will be avoided where possible and the Project site is located a further distance from the Kingsford Smith Memorial (approximately 95 m). Based on this, it is considered unlikely that there will be any construction related vibration impacts on these neighbouring receptors as a result of the Project.

It is considered that the residential areas (Eagle Farm, Hendra, Nundah, Northgate and Banyo) are a sufficient distance away from the Project site and will not be impacted as a result of vibration generated by the Project.

9.6 Mitigation measures

A summary of each of the predicted impacts related to noise and vibration and the environmental management measures for the earthworks phase of the Project is provided in Table 9.6.

Table 9.6 Noise and vibration potential impacts and mitigation measures

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Noise				
Generation of noise during construction of the Project	Advise adjacent tenants of the potential noise impacts that may occur during construction	■ Provide advance notice to, and regular communication with, existing potential affected tenants before and throughout the construction period	Prior to and during construction	To be addressed during detailed design phase and construction
	Undertake a background noise monitoring program for the Project	■ Noise monitoring to be undertaken to collect information that can inform consultation with neighbouring tenants, if required, and to provide a benchmark to assess construction noise monitoring results against. Undertake baseline noise monitoring at the Kingsford Smith Memorial and the Brisbane Airport Services Centre at least two weeks prior to the commencement of construction (refer Figure 7.1). The following should be undertaken: – A battery powered noise logger should be used – Noise data collection and analysis to be done in accordance with AS 1055.1 Acoustics – Description and measurement of environmental noise – To be undertaken in accordance with the *Noise Measurement Manual* (EHP 2013)	Prior to construction	Requirement to be included in the EMP

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
	Implement a range of techniques to minimise noise impacts as a result of bulk earthworks activities, including rock crushing	▪ If required, (eg a validated complaint is received or an exceedance of the limits set out in this EAR are confirmed), an investigation will be undertaken to determine the source of the exceedance/complaint. ▪ Where possible and practicable, noise machinery should have appropriate mufflers, silencers and/or enclosures fitted to reduce noise transmission ▪ Avoid noisy plant/machines working simultaneously close together and adjacent to sensitive receivers ▪ Ensure all equipment is limited to an instantaneous sound pressure level at 15 m of L_{max} 85 dBA (under worst case operating mode), either by fitting silencers/shrouds to existing equipment or by using updated equipment ▪ Where possible, locate and operate any constant noise sources (ie generators) as far as possible from adjacent or nearby premises and the Kingsford Smith Memorial ▪ Excessively noisy machinery should preferably not operate during sensitive night time hours (ie between 10 pm and 7 am), and should be located as far as possible from the noise-sensitive premises. Wherever possible, restrict usage to daytime hours ▪ Equipment used during Project works are to be operated and maintained in a proper and efficient manner to minimise noise levels ▪ Equipment/machinery should be shut down when not in use	Construction	Requirement to be included in the EMP
Potential community complaints regarding noise	Manage and monitor noise at sensitive receptors who experience noise related impacts during the construction phase	▪ Keep a register of noise related complaints and record the time and nature of the alleged incident to aid in complaint verification ▪ Investigate the source of substantiated noise complaints ▪ Within seven days of the noise complaint, report the results of the investigation and the actions taken to 'close out' the complaint to the complainant and BAC Environmental Advisor ▪ Where noise complaints persist, undertake noise monitoring 1.0 m from the façade of affected properties to assess noise levels against the EPP (Noise) criteria and to assist with future management of noise complaints. Outside the hours of 7am to 7pm Monday to Saturday (excluding public holidays), if noise at sensitive receptors off Airport land continues to exceed the EPP (Noise) criteria, the noise generating activity on the Project site will cease operations	Construction	Requirement to be included in the EMP

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Vibration				
Vibration from the construction phase leading to cosmetic damage to commercial buildings and sensitive receptors	Undertake a background vibration monitoring program for the Project	▪ Background vibration monitoring to be undertaken to collect information that can inform consultation with neighbouring tenants, if required, and to provide a benchmark to assess construction vibration monitoring results against. Undertake baseline vibration monitoring inside the Kingsford Smith Memorial at least two weeks prior to the commencement of construction (refer Figure 7.1).	Prior to construction	Requirement to be included in the EMP
	Minimise the likelihood of damage to commercial buildings and sensitive receptors as a result of vibration from construction activities	▪ Condition assessments of existing buildings within close proximity to the Project site, including the Kingsford Smith Memorial, will be undertaken prior to and during construction ▪ Investigate the potential of using static rollers instead of vibratory rollers ▪ Piling should not be undertaken within 200 m of the Kingsford Smith Memorial unless suitable control and monitoring are implemented ▪ All machinery operating within 100 m of the Kingsford Smith Memorial is to be limited to 15 km/h with appropriate signage to be displayed ▪ Advise stakeholders of upcoming works via regular stakeholder communications. Stakeholders will have the opportunity to discuss with BAC if there are any concerns. ▪ During vibration inducing works within 200 m of the Kingsford Smith Memorial, and if a validated complaint regarding vibration is received, vibration monitoring shall be undertaken at the Kingsford Smith Memorial to ensure that vibration levels are kept below 5 mm/s in consultation with the BAC Environmental Advisor ▪ As far as practical, all operations causing relatively high levels of vibration should be carried out at a time to cause the least annoyance to neighbours (eg daytime hours) ▪ Where possible, locate and operate any constant vibration sources (eg generators), as far as possible from adjacent or nearby premises	Prior to construction, and during construction	Requirements to be included in the EMP

10 Social and economic issues

10.1 Introduction

This section provides a summary of the existing socio-economic environment relevant to the Project site. This provides an indication of who to target during stakeholder communication for the Project.

10.2 Methodology

A review of the legislation, policy and guidelines relevant to social and economic issues and stakeholder communication requirements for the Project has been undertaken. A review of the existing environment in relation to social and economic baseline conditions within and surrounding the Project site and stakeholder communication requirements on Airport land is provided.

The existing environment conditions have indicated the potential impacts that may occur during the construction of the Project. Mitigation measures are also recommended to be implemented during construction.

10.3 Relevant documents

10.3.1 Airport Development Consultation Guidelines

Requirements for engaging with the community related to airport development are included in the *Airport Development Consultation Guidelines* (Department of Infrastructure, Transport, Regional Development and Local Government 2012). The guidelines were prepared to assist Airport Lessee Companies that are managing and operating Australia's leased federal airports in the process of stakeholder consultation. The aim of the guidelines seek to outline how consultation processes in relation to land use, planning and developments at the leased federal airports should be managed, with particular emphasis on the preparation of Master Plans, Airport Environment Strategies and Major Development Plans.

A range of consultation approaches are suggested in the guidelines including:

- Public meetings
- Stakeholder meetings
- Focus group meetings
- On site meetings
- Permanent or ad hoc consultative committees
- Submissions
- Individual discussions

The choice of an appropriate approach depends on the type and location of the Project, the stakeholder group and their willingness to participate, the potential impact to the community/ environment, and statutory timeframes.

10.4 Existing environment

The nearest residential area are the suburbs of Nudgee (1.6 km north), Banyo (1.3 km north), Nundah (2.2 km west), Pinkenba (1.9 km south and east) and Eagle Farm (1.3 km south). The Gateway Motorway and industrial areas are located between the Project site and the nearest residential suburbs (refer Figure 8.1). Surrounding economic activities include:

- Kingsford Smith Memorial and Southern Cross Aircraft (95 m north east)
- Tenancies along Nancy Bird Way, such as:
  - Brisbane Airport Services Centre (directly across Nancy Bird Way, operating 6am to 10pm), including:
    - Shell Coles Express
    - McDonalds and other food outlets
    - Vehicle servicing precinct – Ultra Tune, Sparkles Car Wash
  - Thrifty Car Rental and Hire
  - CPA Remote Public Car Park (directly across Moreton Drive)
- Tenancies along Bert Hinkler Drive, such as:
  - CPA Staff Car Park Stages 1 and 2
  - CPA Staff Car Park Stages 3 and 4 (under construction)
  - Taxi, bus and limousine parking
- Tenancies along Ivy May Way such as:
  - Europcar Car Rental
  - Avis Car Rental
  - Budget Car Rental
  - Hertz Car Rental
  - Qantas Valet Storage Facility
- Tenancies within the International Terminal (across Airport Drive), such as:
  - Airtrain services
  - Secure car parking
  - International Terminal lounge, food and shopping outlets
- Commercial tenancies along Qantas Drive (across Airport Drive)
- Brisbane Domestic Terminal, including car parking and hire cars (approximately 1.8 km north east of the Project site)
- Direct Factory Outlet (1.6 km south-west)

The nearest sensitive receptors to the Project site include:

- Northgate State School (2.6 km west)
- Hendra State School (2.75 km south west)
- Novotel Hotel (1.8 km south west)
- Tadpoles and Joey Club Childcare Centre (2.1 km south west)
- Pullman and Ibis Hotel (1.5 km north) (under construction)

10.5 Potential impacts

10.5.1 Social and economic issues

The main social and economic issues for the Project are likely to include:

- Potential impacts to the Kingsford Smith Memorial and adjacent tenancies due to noise and vibration occurring as a result of construction activities
- Potential impacts to adjacent tenancies where the quality of the services provided by the businesses is compromised by dust on rental cars or cars that have been parked at the valet service
- The potential employment benefits from the construction of the Project and developments on the land
- Potential air quality impacts to the Kingsford Smith Memorial and adjacent tenancies and residences and aircraft operators
- Potential minor impacts to adjacent tenancy access and disruption to local road network

10.5.2 Stakeholder communications

There are a range of potential impacts to the surrounding stakeholders that may occur during construction of the Project. For the general community, BAC could make use of their current process in providing monthly traffic update brochures advising airport users and tenants about road works on-airport. BAC proposes to provide updates of upcoming Project works via regular stakeholder communications via BAC's normal avenues. If stakeholders have any concerns with the Project works, they will have the opportunity to discuss this with BAC.

Stakeholders within 1.0 km of the Project site will be informed of the Project and its potential impacts.

There is the potential to impact on surrounding tenancy accesses during construction of the Project. Mitigation measures to address traffic management are provided in Section 13.6, while general measures to address stakeholder concerns that may occur during construction are provided in Table 10.1. It should be noted that construction activities may result in air quality and noise and vibration impacts to adjacent tenancies and stakeholders (as discussed in Sections 8 and 9 respectively). Measures addressing air quality and noise and vibration issues are outlined in the mitigation tables provided in Sections 8.7 and 9.6, including complaint response procedures.

10.6 Mitigation measures

Mitigation measures to address air quality, noise and traffic management are provided in Sections 8, 9 and 13 respectively.

Table 10.1 provides a summary of the mitigation measures to be adopted during construction of the Project.

Table 10.1 Potential impacts and mitigation measures related to social and economic issues

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Stakeholder concerns are not accounted for during the construction phase	Implement a plan to address stakeholder concerns in accordance with BAC's normal procedures	▪ Supply updates on upcoming works via regular stakeholder communications through BAC's normal avenues ▪ Stakeholders within 1.0 km of the Project site will be informed of the Project and its potential impacts	Prior to construction/ construction	BAC to advise stakeholders before construction commences and then followed by regular Project updates during construction
Access arrangements during construction works, such as diversion of existing streets	Ensure that access impacts are managed appropriately	▪ Ensure access for infrastructure maintenance (eg Energex substation etc) is maintained throughout Project works ▪ Temporary construction, pedestrian, vehicle access and parking arrangements to be planned and scheduled to minimise possible impacts to surrounding tenants and road users, if needed ▪ Prepare and distribute advice to stakeholders regarding road closures (if required) and changes to access arrangements	Prior to construction/ construction	BAC to address prior to construction, so that arrangements can be made during the construction phase

11 Cultural heritage

11.1 Introduction

An assessment of the potential historical heritage issues within the Project site has been undertaken by Converge Heritage and Community (Converge) and is summarised in the following sections. These sections also detail Indigenous cultural heritage associated with the Project site. The Brisbane Airport Auto Mall Heritage Report prepared by Converge is provided in Appendix J.

11.2 Methodology

The cultural heritage assessment comprised a desktop assessment by Converge. It is noted that Converge have extensive previous experience at Brisbane Airport and previously prepared the Heritage Management Plan.

A desktop assessment was undertaken to determine the presence, extent and likelihood of significance of any places likely to be located within the Project site. This assessment comprised searches of statutory and non-statutory registers and databases, and a review of existing published and unpublished reports, surveys and assessments of the Project site and the surrounding area.

The findings from this desktop assessment informed the potential impacts that Projects works may have on cultural heritage. Mitigation measures were developed to manage the potential impacts on cultural heritage.

11.3 Relevant documents

The key commonwealth legislation for the protection of Indigenous and non-Indigenous cultural heritage is the EPBC Act, which administers the National Heritage List and the Commonwealth Heritage List. Other commonwealth legislation includes the *Protection of Moveable Cultural Heritage Act 1986*, which regulates the export of Australia's significant cultural heritage objects, and the *Australian Heritage Council Act 2003*, which established the Australian Heritage Council to advise the Australian Government on heritage matters and administers the former Register of the National Estate and the Australian Heritage Places Inventory.

The QH Act manages places of state heritage significance in Queensland and established the Queensland Heritage Council and the Queensland Heritage Register. Indigenous cultural heritage is managed under the ACH Act and legislates the 'cultural heritage duty of care' to ensure all persons undertaking an activity 'take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage'.

Local heritage is managed under the BCC planning scheme, *Brisbane City Plan 2014*.

Other registers used during the desktop assessment included the Queensland National Trust Register and Monument Australia.

The following previous reports relevant to historical heritage at Brisbane Airport were considered by Converge during the desktop assessment include (refer Appendix J):

- Brisbane Airport Heritage Management Plan (Converge 2016)

- AES Cultural Heritage Chapter
- New Parallel Runway Project (BAC 2006)
- Kingsford Smith Memorial, Brisbane Artefact Condition Report (Leighton Contractors 2008)
- Kingsford Smith Memorial, Brisbane Post NARP Artefact Condition Report (Leighton Contractors 2009)

11.4 Existing environment

11.4.1 Site history

The Brisbane Airport services domestic and international passengers, with the majority of Airport land having become heavily industrialised. The surrounding developments associated with the airport include terminal buildings, maintenance facilities, car parking, extensive road networks, and communication, water and sewerage lines. Prior to its current use, the Brisbane Airport had been subject to a number of different land uses and development activities.

Prior to European settlement, the airport site and surrounding areas provided a natural environment rich in a variety of food, resources and useful materials for Indigenous communities in the region. European settlement of the area began with a convict settlement in the location of the former Eagle Farm Airport. The current airport site was used for agriculture and included the former township of Cribb Island (BAC 2014a). In World War II, the airport site was used for military purposes. The Heritage Report provided in Appendix J further details the site history.

11.4.2 Heritage registers

Converge conducted a search of various heritage registers and databases for historic heritage in the vicinity of the Project site (refer Appendix J). The findings of these searches are summarised in Table 11.1.

Table 11.1 Heritage register and database search results

Place	Heritage register /database	Statutory (Y/N)	Distance from Project site	Relevant to Project (Y/N)
Eagle Farm Women's Prison and Factory Site	Queensland Heritage Register (ID 600186) Register of the National Estate (ID 16490) Commonwealth Heritage List (ID 105478) National Trust of Queensland Register (ID BNE 1/134)	Y	Located 2 km from Project site	N
Allison Testing Stands (former)	Queensland Heritage Register (ID 602329)	Y	Located 2 km from Project site	N
Second World War Hangar No. 7	Queensland Heritage Register (ID 601007) Register of the National Estate (ID 18174) Commonwealth Heritage List (ID 105407) National Trust of Queensland Register (ID BNE 1/805).	Y	Located 2.5 km from Project site	N
Brisbane Domestic Air Terminal (former)	National Trust of Queensland Register (ID BNE 1/916)	N	Possibly demolished	N
Australian Airlines Baggage Collection (former)	National Trust of Queensland Register (ID BNE 1/917)	N	Possibly demolished	N
Aircraft Hangar 2 (former)	National Trust of Queensland Register (ID BNE 1/918)	N	Possibly demolished	N
Aircraft Hangar 1 (former)	National Trust of Queensland Register (ID BNE 1/919)	N	Possibly demolished	N

Place	Heritage register /database	Statutory (Y/N)	Distance from Project site	Relevant to Project (Y/N)
Sir Charles Kingsford Smith Memorial	Monument Australia	N	Located 95 m from Project site	Y
460 Squadron Memorial	Monument Australia	N	Located 100 m from Project site	Y

Converge determined that the Project site has little to no heritage value, although it has potential to contain items or sites that may be unearthed during construction. The Kingsford Smith Memorial, which contains the Southern Cross Aircraft, is potentially significant at a State or Commonwealth level for its historic significance, rarity, aesthetics, technical achievements and associative values. It is not currently listed on any statutory heritage register.

Converge also found that the Squadron 460 Memorial has some local heritage value, although it is not listed on any statutory heritage register.

The full assessment of the heritage significance of the Project site is provided in Appendix J.

11.5 Potential impacts

The Project works will involve bulk earthworks on land that has previously been filled. In addition, it is expected that there will be limited excavations required for the Project. Potential heritage sites/places within the Project site may include survey trees, remnant fence lines and historic drains and culverts. However, it is considered there is limited potential for Project works to impact on cultural heritage within the Project site.

Consideration has been given to the potential for emissions associated with Project works, such as vibration and dust, to impact on the Kingsford Smith Memorial. Previous projects undertaken near the Memorial, including the Northern Access Road Project (which involved pile driving in association with construction of the Nancy Bird Way bridge), did not result in any impacts from dust or vibration or complaints relating to the heritage values associated with the Memorial. It is noted that the Auto Mall Project is located further from the Kingsford Smith Memorial than the Northern Access Road Project and does not involve pile driving. As such, it is considered that compliance with the recommendations of the Brisbane Airport Auto Mall Heritage Report (Converge 2017; Appendix J) will ensure the works do not adversely impact the Kingsford Smith Memorial.

11.6 Mitigation measures

Table 11.2 provides a summary of the mitigation measures to be adopted during construction of the Project.

Table 11.2 Cultural heritage management measures

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Cultural heritage find is made during construction on the Project site	Ensure all staff have completed a site induction	■ Site induction to include: – Cultural heritage awareness training – Familiarisation material to identify a cultural heritage find – Stop Work Procedure under the Heritage Management Plan – Process for collection, transport and storage of any cultural heritage finds	Construction	Requirements to be included in the EMP
	Implement the Stop Work Procedure and ensure no impact is sustained to cultural heritage	■ Should unexpected cultural heritage material be encountered during Project works, the Stop Work Procedure, as identified in the Brisbane Airport Heritage Management Plan, is to be implemented	Construction	Requirements to be included in the EMP Stop Work Procedure to be included in the EMP
Dust and vibration impacts at the Kingsford Smith Memorial as a result of Project works	Implement dust and vibration mitigation measures during construction	■ Prior to the commencement of Project works, conduct a building assessment on the Kingsford Smith Memorial and repair/replace all door seals and building joints as required ■ Implement the air quality mitigation measures and undertake dust monitoring, as per the measures outlined in Section 8.7 ■ Implement mitigation measures for vibration and undertake vibration monitoring during all vibration inducing works near the Kingsford Smith Memorial, as per the measures outlined in Section 9.6	Prior to construction and during construction	Requirements to be included in the EMP

12 Waste and hazardous goods management

12.1 Introduction

This section outlines the waste types and streams, and management measures to be applied during the construction of the Project. Reference is made to the relevant legislative requirements, as well as industry best practice.

12.2 Methodology

A desktop review of the waste related legislation and policy was undertaken to determine its applicability to the Project. Waste streams that are anticipated to be generated during construction were identified. This assisted with the identification of requirements for management of waste in the Project site.

12.3 Relevant documents

A background to legislation relevant to Airport land is provided in Section 3. Specific details related to waste management are discussed in this section.

12.3.1 Brisbane Airport Environment Strategy

Under the AES (BAC 2014), the action plan for waste management seeks to achieve the sustainable management of waste through initiatives such as waste minimisation and segregation of waste and recycling. The AES gives consideration to the *Waste Reduction and Recycling Act 2011* when managing waste on Airport land.

12.3.2 Waste Reduction and Recycling Act 2011

The EP Act defines a hazardous contaminant as being *a contaminant, other than an item of explosive ordnance that, if improperly treated, stored, disposed of or otherwise managed, is likely to cause serious or material environmental harm because of:*

- *its quantity, concentration, acute or chronic toxic effects, carcinogenicity, teratogenicity, mutagenicity, corrosiveness, explosiveness, radioactivity or flammability; or*
- *its physical, chemical or infectious characteristics*

Waste is divided into ‘regulated waste’ as defined below and ‘general waste’ which is defined as waste other than regulated waste. Regulated waste is defined in the EP Reg as:

(a) Commercial or industrial waste, whether or not it has been immobilised or treated; and

(b) Is of a type, or contains a constituent of a type, mentioned in schedule 7, part 1.

Regulated waste includes contaminated soils.

Under the *Waste Reduction and Recycling Act 2011*, priority wastes are those with high disposal impacts (eg toxicity or greenhouse emissions), social impacts (eg amenity or community concern) or whose recovery would present resource savings or business opportunities. Queensland's priority wastes include:

- Plastic waste
- Organic waste
- High volume wastes (eg concrete, treated timber, plasterboard)
- Reginal impact waste (eg mining and industrial development, mattresses, orphan agricultural and veterinary chemicals)
- Fluorescent lights, used tyres, used oil

12.3.3 Work Health and Safety Act 2011

The management of hazardous goods must be in accordance with the *Work Health and Safety Act 2011* (WHS Act). Discussion regarding potential contamination on the site is provided in Section 5. An ACM Management Plan has been developed for the Project, including requirements for asbestos removal and/or encapsulation of ACM on site (refer Appendix G).

Contractors are responsible for any licences required under the WHS Act. Hazardous goods will be handled, stored and disposed of in accordance with the WHS Act.

12.4 Existing environment

Existing vegetation, ground cover and soil are potential waste sources if not managed correctly. Potential waste streams to be managed during construction include:

- Packaging materials – any materials used on site that are delivered in packaging material. This includes pallets, crates, cartons, plastics and wrapping materials. All packaging material will need to be disposed of once the product has been used
- Importation of fill – any excess fill that has been imported to the Project site may either be graded or removed from the site
- Exporting of fill – existing fill unsuitable for use as surcharging material. Excess fill not needed on site
- Demolition wastes – this includes shrubs and trees and any drainage infrastructure that may need to be replaced
- Wastes from construction equipment maintenance – various heavy vehicles and construction equipment will be utilised for the duration of the construction phase. Liquid hazardous wastes from cleaning, repairing and maintenance of equipment may be generated. Leakage or spillage of fuels/oils within the site needs to be managed and wastes disposed of appropriately
- Regulated wastes – including hydrocarbon waste such as waste oil, oily water, oily sludge, grease, coolant, oily rags, oil filters, drums, detergent, solvents, batteries, tyres, paints and resins
- General wastes – this includes office wastes, scrap materials and biodegradable wastes
- Vegetation wastes – cleared vegetation, including ground covers, trees and shrubs and declared weeds

12.5 Potential impacts

A range of potential impacts may occur due to poor waste management during construction of the Project:

- Ground contamination and water quality impacts as a result of construction waste
- Unnecessary waste generated as a result of inadequate waste management practices
- Water quality impacts due to poor waste management during construction

- Water quality and ground contamination impacts as a result of spillage of hazardous goods
- Amenity issues for surrounding land users

12.6 Mitigation measures

Potential impacts relating to the management of waste within the Project site and recommended mitigation measures are outlined in Table 12.1.

Table 12.1 Waste potential impacts and mitigation measures

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Ground contamination and water quality impacts as a result of demolition and construction wastes	Maximise the opportunities for reuse of existing materials in the design phase	■ Identify possible secondary uses for construction wastes prior to and during construction ■ Designate location of construction compounds and areas for each waste stream to allow for waste segregation ■ Re-use surcharge and stockpile materials from other project sites at BAC if possible	Construction	To be addressed in the EMP
	Manage the storage and disposal of necessary construction waste	■ Ensure construction and industrial waste is stored in industrial covered skips/bins ■ Contain and capture runoff from designated waste areas ■ No waste is to be burnt on site	Construction	Requirements to be included in the EMP
Unnecessary waste generated as a result of inadequate waste management practices	Adopt appropriate waste management practices during construction	■ Develop and implement a waste management plan for the Project as part of the EMP ■ Implement the ACM Management Plan for the Project ■ If possible, vegetation wastes from site clearing to be used in on site landscaping and erosion and sediment activities ■ Weed management to be undertaken in accordance with requirements outlined in Section 6.5 ■ Ensure waste bin lids are closed and work sites kept tidy to avoid littering and attraction of birds, vermin and other wildlife ■ Any packaging materials to be collected separately and re-used or recycled including timber, paper, cardboard, pallets and plastics ■ Waste disposal is to occur at approved facilities ■ Engage the services of a licensed waste contractor and recycler if removing regulated wastes from the Project site ■ Ensure excess imported fill or unsuitable surcharging material is removed from site upon completion ■ Regulated waste is to be managed and disposed of in accordance with regulatory requirements and the EMP. Licensed contractor is to remove regulated waste from site, and provide EHP's trackable waste forms to BAC for their records	Construction	Requirements to be included in the EMP Waste Management Plan to be incorporated as a sub-plan under the EMP

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Water quality impacts due to poor waste management during construction	Manage necessary waste stockpiles and storage areas, particularly adjacent to sensitive land uses and waterways	Contractor is to undertake/ensure: ▪ Wastes separated for reuse ▪ Erosion and sediment control measures are implemented ▪ Stockpiles separated from other wastes ▪ Stockpiles are to have appropriate sediment runoff controls to reduce contaminants leaving the Project site and to ensure contaminants are contained during construction. Note, the Project site will be isolated from external waterways during earthworks construction.	Construction	Requirements to be included in the EMP
Water quality and ground contamination impacts as a result of spillage of hazardous goods	Reduce the potential for water quality and ground contamination impacts due to spillages of hazardous goods	Construction specification requirements are outlined in Section 5.6	Construction	Requirements to be included in the EMP

13 Traffic and aviation safety

13.1 Introduction

This section outlines the potential issues relating to traffic impacts and aviation safety associated with the Project and discusses appropriate mitigation measures to be undertaken during the construction stages.

13.2 Methodology

A review of relevant information and studies relating to traffic impacts and aviation safety during construction was conducted, identifying the applicable information to be applied to the Project. The assessment of the existing environment was based on desktop studies and traffic counts on Airport Drive and Nancy Bird Way provided by BAC.

It is to be noted that traffic impacts has been undertaken for the site clearing and earthworks component only for this Project, across the three stages of construction.

13.3 Relevant documents

Legislation relevant to the Project is summarised in Section 3 of this EAR.

Relevant documentation related to the traffic assessment can be found within the following sections.

13.3.1 Traffic volumes

Existing mid-block traffic volumes for Nancy Bird Way and Airport Drive dated the week commencing 19 December 2016 have been provided by BAC.

The Engineering Concept Design Report (Opus 2016) has been used as the basis for the excavation and fill requirements for construction (refer Section 2.4).

13.3.2 Aviation safety

Certain airspace around Brisbane Airport (known as 'prescribed airspace') is protected under the *Airports (Protection of Airspace) Regulations 1996*. The prescribed airspace is made up of:

- The OLS and Procedures for Air Navigation Services Aircraft Operations (PANS-OPS) surfaces and the airspace above those surfaces, for existing and future air transport operations into and out of Brisbane Airport
- Any additional airspace that has been declared under the regulations by the Secretary of the DIRD

These matters are discussed in relation to the existing situation at Brisbane Airport in Section 13.4.3 below. As discussed in Section 3.2.1, Sections 182 and 183 the Airports Act requires a person to obtain approval to undertake controlled activities within the prescribed airspace. The controlled activities that potentially apply to the Project include:

c) *any other activity that causes a thing attached to, or in physical contact with, the ground to intrude into the prescribed airspace*

d) operating a source of artificial light, where:

i the intensity of the light emitted exceeds the level ascertained in accordance with the regulations; and

ii. the light is capable of blinding or confusing pilots of aircraft operating in the prescribed airspace

g) an activity that results in the emission of smoke, dust or other particulate matter, where:

i. the emission exceeds the level ascertained in accordance with the regulations; and

ii. the smoke, dust or particulate matter is capable of affecting the ability of aircraft to operate in the prescribed airspace in accordance with Visual Flight Rules

An application for a controlled activity approval must be submitted to the Secretary of the DIRD at least 28 days before the intended commencement of the controlled activity.

13.4 Existing environment

13.4.1 Local road network

The Project site is enclosed by Moreton Drive, Airport Drive and Nancy Bird Way and located in close proximity to the Brisbane International Terminal (Airport Central Precinct) (refer Figure 1.1).

13.4.1.1 Moreton Drive

Moreton Drive is a BAC controlled, four lane divided road running north – south, providing the main access route to the Brisbane Domestic Terminal and an alternative route to the Brisbane International Terminal from the Gateway Motorway via Nancy Bird Way.

13.4.1.2 Airport Drive

Airport Drive is a BAC controlled, four lane median divided road running parallel to Moreton Drive, providing the main access route to the Brisbane International Terminal and an alternative route to the Brisbane Domestic Terminal.

13.4.1.3 Nancy Bird Way

Nancy Bird Way is a BAC controlled, four lane two-way road running east-west, connecting Moreton Drive and Airport Drive. It currently provides access to the AIRPARK precinct as well as the Brisbane Airport Service Centre.

13.4.2 Existing traffic volumes

Vehicle Volume Streams Reports were provided for northbound and southbound directions along Airport Drive, and eastbound and westbound directions along Nancy Bird Way as presented within Figure 13.1 from 19 to 25 December 2016.

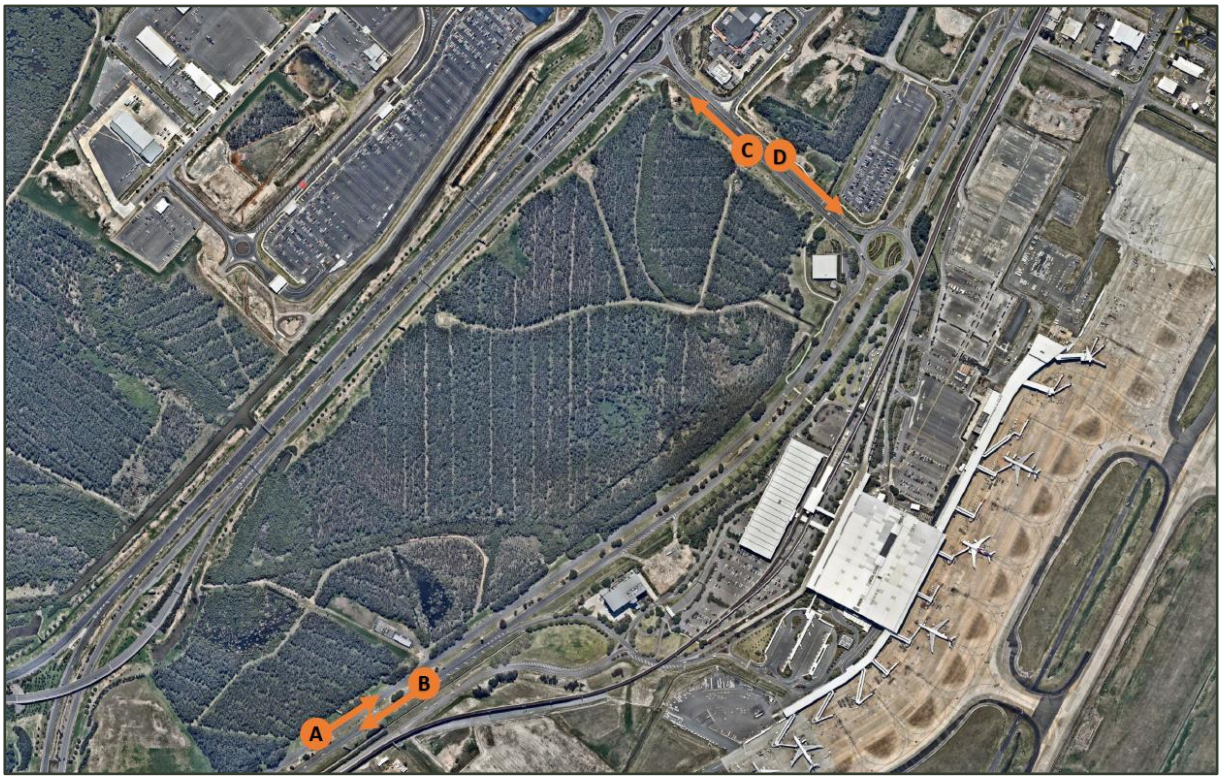

Figure 13.1 Streams traffic data locations provided by BAC

A summary of the Average Annual Daily Traffic (AADT), maximum peak hour, 12 hour total and 24 hour total traffic volumes taken from the vehicle volume reports is presented within the Table 13.1.

Table 13.1 Existing traffic volume summary (based on 19 to 25 December 2016)

Location	AADT	Maximum hourly volume (peak hour)	Maximum total 12 hour volume	Maximum total 24 hour volume
A (Airport Drive NB)	5,280	633 (06:00 – 07:00)	3,703	5,807
B (Airport Drive SB)	4,170	432 (12:00 – 13:00)	3,772	5,019
C (Nancy Bird Way WB)	4,564	366 (07:00 – 08:00)	3,371	5,136
D (Nancy Bird Way EB)	10,324	955 (06:00 – 07:00)	7,597	11,637

13.4.3 Aviation safety

13.4.3.1 Obstacle Limitation Surface and PANS-OPS surface

The OLS are conceptual (imaginary) surfaces associated with a runway, which identify the lower limits of the aerodrome airspace above which objects become obstacles to aircraft operations, and must be reported to CASA. Any obstacle close to or penetrating the OLS may need to be marked and/or lit in accordance with CASA requirements. Chapter 8 of the *Manual of Standards Part 139 – Aerodromes* states that the aerodrome operator must submit details of obstacles to CASA for hazard assessment and particular requirements for marking and lighting.

According to the BAC 2014 Master Plan, the PANS-OPS are surfaces that cannot be infringed on a permanent basis in any circumstances. An aircraft is to have a specified minimum clearance above any accountable obstacle in situations where the pilot is relying entirely on the information derived from cockpit instruments and may have no external visual reference to the ground, to obstacles or to other aircraft. The minimum obstacle clearance requirement is added to the height of the tallest object under the PANS-OPS surface to determine the minimum or lowest safe altitude to which a pilot may descend in attempting to establish visual reference to the airport.

According to the BAC Master Plan, the Project site is not located in the OLS or PANS-OPS for the current runway. However, the Project site would be located within the OLS and PANS-OPS of the future parallel runway, which will become operational in 2020. Figures 13.2 and 13.3 below show the mapping for the OLS and PANS-OPS respectively covering the Project site. The southern portion of the Project site is within the 35 to 47.5 m OLS contour. The north eastern portion of the Project site is within the 50 to 98 m Australian Height Datum (AHD) PANS-OPS zone and the south western portion of the Project site is within the 3.9 to 98 m AHD PANS-OPS zone.

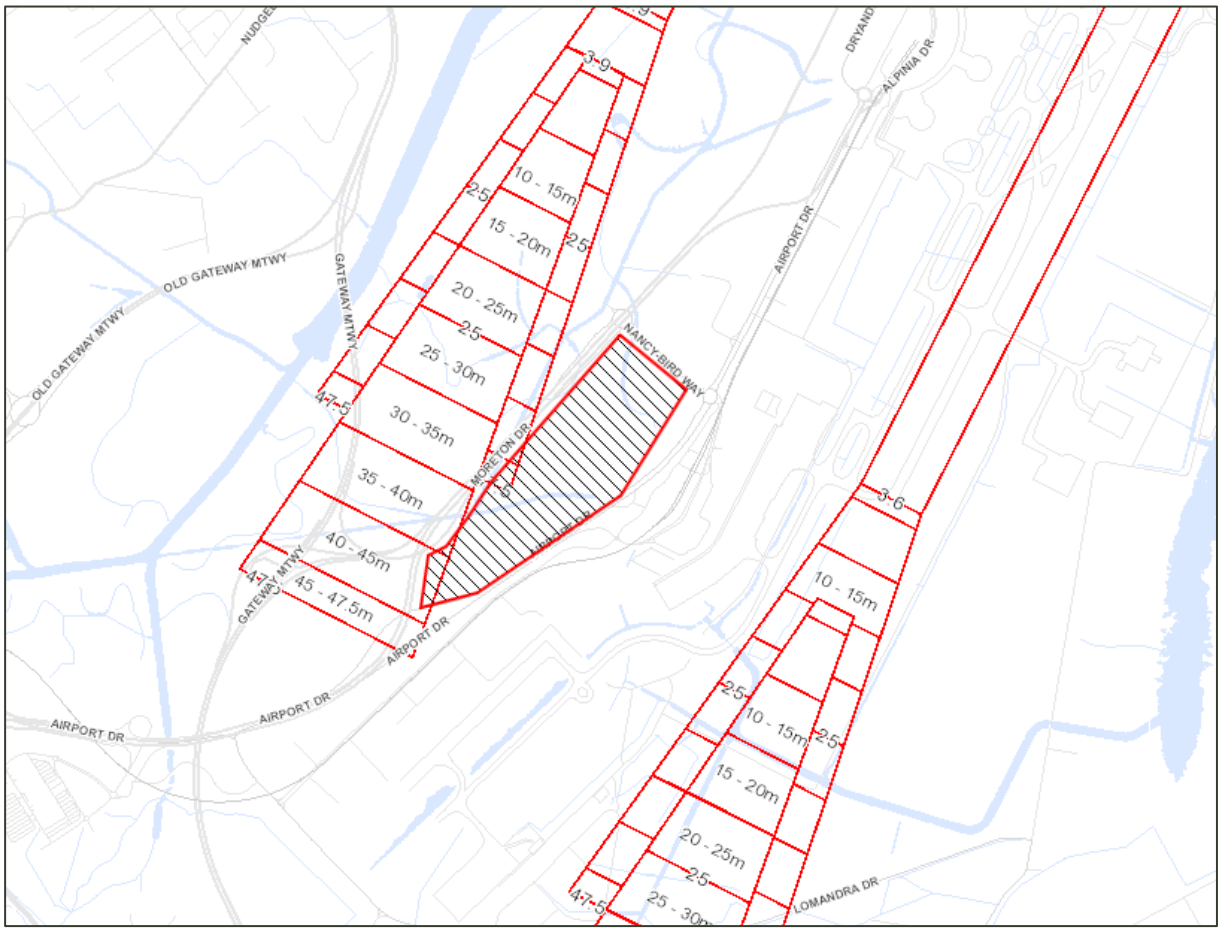

Figure 13.2 Prescribed airspace covering the Project site (hatched area)

Source: BCC 2014

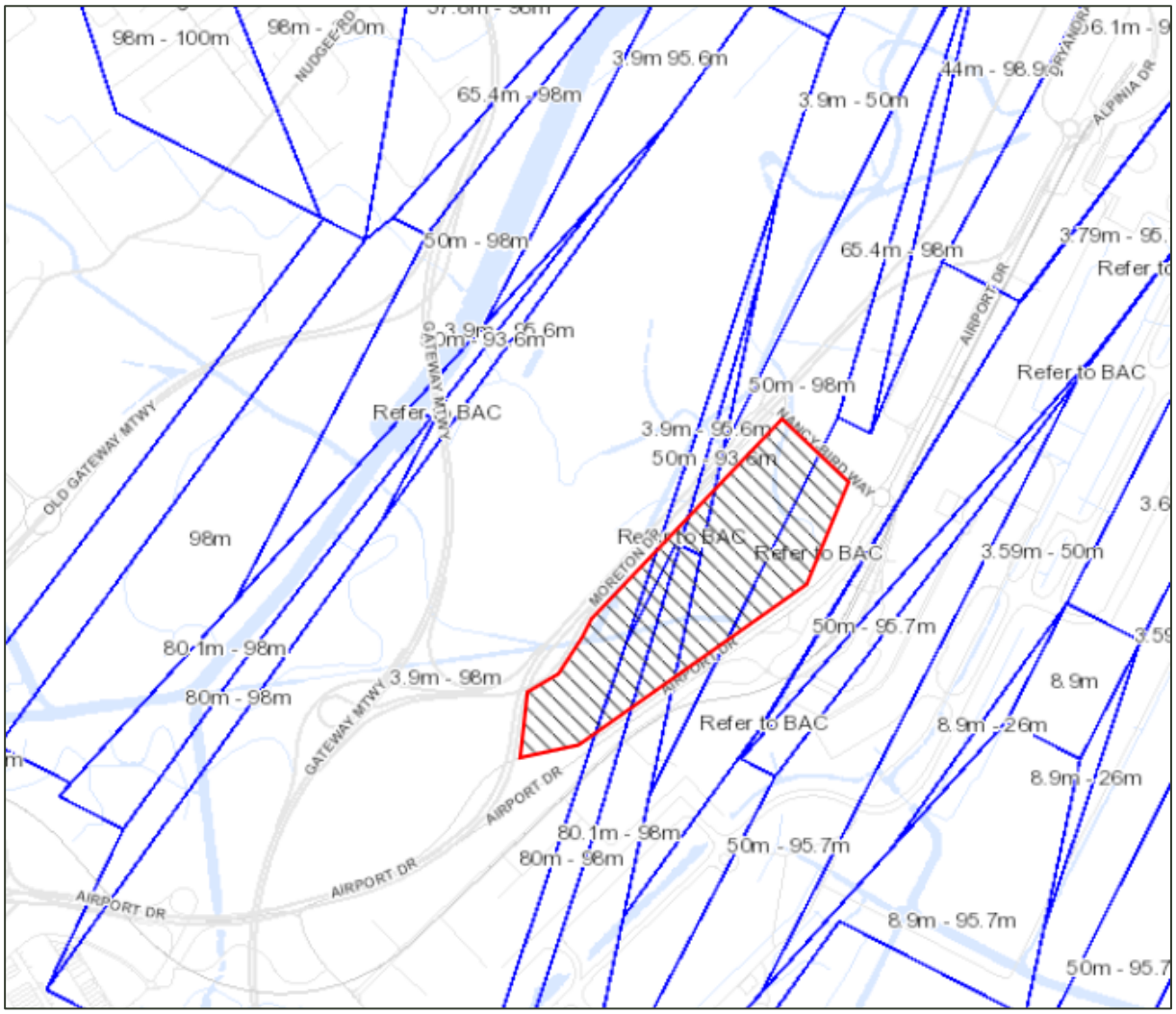

Figure 13.3 Procedures for air navigation surfaces covering the Project site (hatched area)

Source: BCC 2014

Construction plant and equipment operating in 2020 and beyond will not encroach into the prescribed airspace for the future parallel runway. However an assessment of construction plant and equipment will be conducted upon commencement of the works and if in exceedance of the OLS contour, an approval will need to be sought from the Secretary of the DIRD under the Airports Act to undertake a controlled activity if required.

It should be noted that the construction of buildings within the Project site does not form part of this EAR.

13.4.3.2 Lighting and reflection

The use of lighting around Brisbane Airport would be a concern in the following instances:

- If bright lights (eg floodlights) emit too much light above the horizontal plane, there is a possibility that a pilot could be dazzled, and momentarily unable to read cockpit instruments
- Lights may impact on air traffic controllers' ability to clearly see aircraft approaching the airport
- Lights may create a pattern that looks similar in appearance to approach or runway lighting, potentially causing confusion for pilots.

CASA has powers to regulate hazardous lighting under the *Civil Aviation Safety Regulations 1998*. Lighting will need to comply with Australian Standards and requirements of BAC, CASA and Airservices Australia. It will need to be ensured that lighting of the development will meet the appropriate standards including Part 139 of the *Manual of Standards – Aerodromes* "lighting within the vicinity of aerodromes". Approval would need to be sought from the Secretary of the DIRD in the event that the intensity of the lighting chosen for the Project exceeds the levels outlined in the regulations, which would be considered blinding or confusing to pilots who are operating aircraft in the prescribed airspace.

The BAC Master Plan identifies zones that represent the "maximum intensity of lights sources measured at 3° above the horizontal". The eastern portion of the Project site is located in Zone B, Zone C and Zone D for the future parallel runway, which becomes operational in 2020 (refer Figure 13.4).

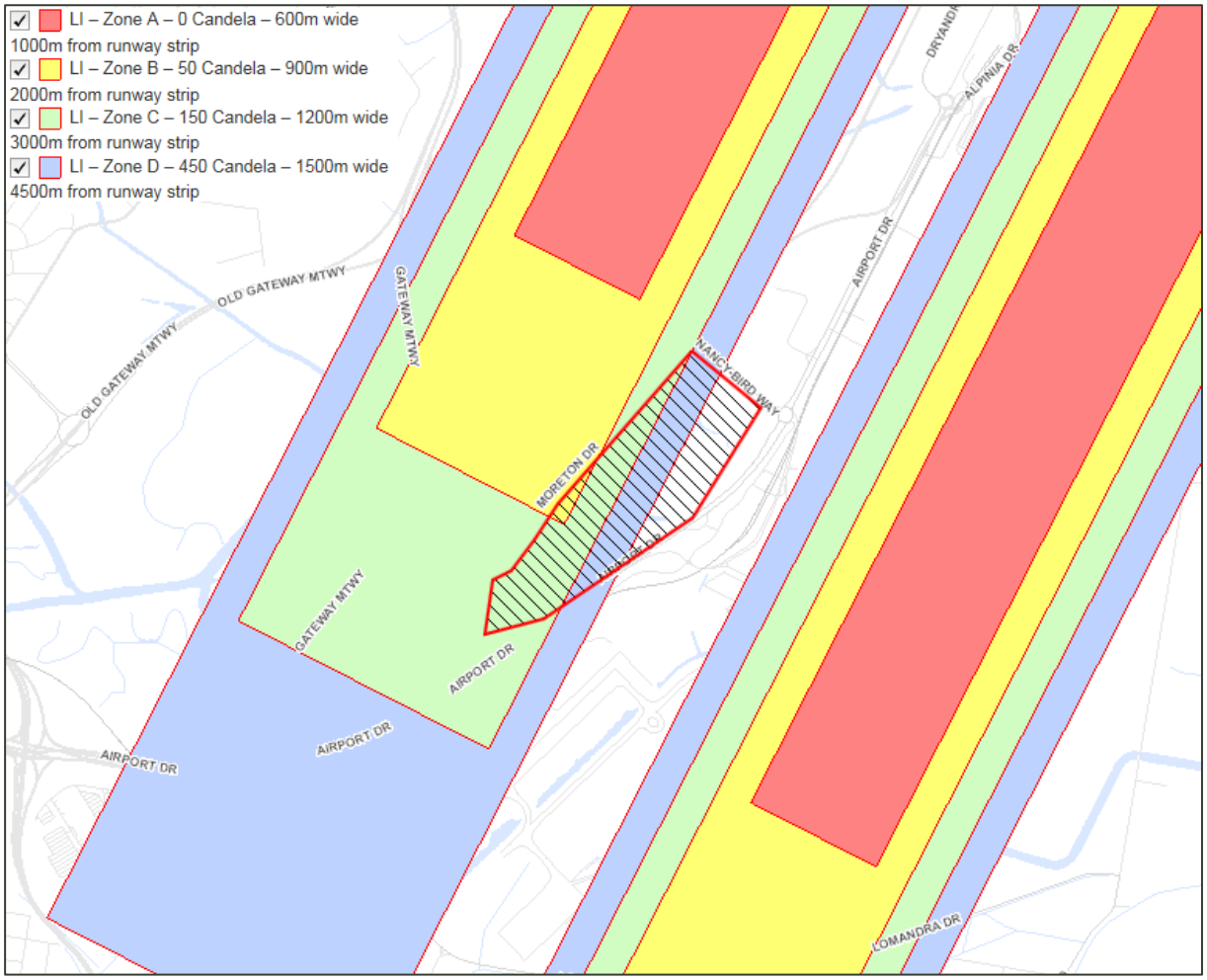

Figure 13.4 Lighting intensity overlay covering the Project site (hatched area)

Source: BCC 2014

13.4.3.3 Project-related dust generation

The generation of dust or other particulate matter is considered to be a controlled activity within the prescribed airspace. Dust generation is considered in further detail in Section 8.

Dust will be managed through the construction phase by implementing measures detailed in Section 8.7. Dust deposition monitoring will also be undertaken to assist in ensuring that dust levels do not exceed the levels outlined in the EHP guidelines (2017e).

13.5 Potential impacts

13.5.1 Traffic management

The Phase 1 delivery of the Project is expected to occur across a three stage construction program, with the site to be suitably prepared from 2021. This timeframe provides a preliminary construction program across approximately six years, although the bulk of the traffic movements are likely to occur in the initial 18 months with additional traffic movements upon completion of surcharging.

The Project may adopt a 24 hour earthwork operation as well as material processing, including sorting, crushing, processing and stockpiling. Site access may be obtained from Airport Drive (for Stages 1, 2 and 3), initially with a left in/left out arrangement, and also from Nancy Bird Way (for Stages 1 and 3). Access from Moreton Drive (left turn only) may also be required as an option. Site access arrangements will be confirmed during detailed design.

The Engineering Concept Design (Opus 2016) and proposed program of works (refer Appendix A) indicate that the likely excavation and fill volumes shall be in the order of:

Table 13.2 Preliminary bulk earthwork requirements for the Project

Stages	Duration of earthwork operation	Excavation volumes (m^3)	Fill volumes (m^3)
1 and 2	Stage 1: 15 months Stage 2: 3 months	67,000 27,600 (Stage 2 only)	General: 380,000 Drainage layer: 8,400 Surcharge: 336,000
3	6 months	7,200	Removal of excess surcharge: 200,000

The likely construction traffic during this period has been based on the following assumptions:

- The importation/removal of approximately 819,000 m^3 of associated earthworks in the initial 18 months of the Project and, in the final six months, removal of 7,200 m^3 of fill material and removal of approximately 200,000 m^3 of excess surcharge
- A truck and dog haul vehicle with a maximum capacity of 16 m^3 operating for 352 days per year (7 day working weeks minus all Queensland public holidays)
- Number of return trips per day:
  - For Stages 1 and 2: ((819,400 m^3 / 16 m^3) / (1.5 years x 352 days) = approximately 97 return trips per day
  - For removal of excess surcharge: ((207,200 m^3 / 16 m^3) / (0.5 years x 352 days) = approximately 74 return trips per day
- Accordingly, approximately **97 return trips** of construction traffic across a 12 hour working day for Stages 1 and 2 (initial 18 months only) and approximately **74 return trips** of construction traffic across a 12 hour working day for Stage 3 (removal of excess surcharge)
- Likely haulage routes include:
  - Stages 1 and 3: Airport Drive, Nancy Bird Way (with Moreton Drive as a potential option)
  - Stage 2: Airport Drive only
- Movement of fill material from the material processing areas to the remainder of the Project site will be done entirely within the Project site itself

During the earthwork program of Stages 1 and 2, the expected construction traffic is anticipated to increase northbound traffic on Airport Drive (over a 12 hour period) by 2.62% and southbound traffic on Airport Drive (over a 12 hour period) by 2.57%. Given the 12 hour earthwork operation, the peak hourly volume of Airport Drive will be increased by less than 2.0% both northbound and southbound.

During the removal of surcharge from Stage 3, the expected construction traffic is anticipated to increase northbound traffic on Airport Drive (over a 12 hour period) by 2.0% and southbound traffic on Airport Drive (over a 12 hour period) by 1.96%. Given the 12 hour earthwork operation, the peak hourly volume of Airport Drive will be increased by less than 2.0% both northbound and southbound.

Internal movement of fill within the site is assumed to be entirely contained within the Project site. In addition, excess surcharge material is anticipated to be re-used for surcharging of Stage 3.

Vehicular access to the surrounding properties is not expected to be affected during construction. Access to the AIRPARK precinct and the Brisbane Airport Services Centre will continue to be accessed via Nancy Bird Way and access to the International Terminal will continue to be via Nancy Bird Way and Airport Drive. Access to the Kingsford Smith Memorial from Airport Drive will not be affected.

It should be noted that these initial inputs are assumptions only and have been provided for indicative impacts. Material sources are yet to be finalised, and as a consequence, alternative haulage routes may also be need to be considered. In addition, the construction time frame and construction schedule may change, which may result in changes to any impacts.

13.5.2 Aviation safety

13.5.2.1 OLS and PANS-OPS surfaces

There are potential limits to heights of equipment and plant used within the Project site during construction beyond 2020 once the New Parallel Runway becomes operational. After 2020, construction plant and equipment (eg wick drain rigs) must be below 35 m in height when working in the south western portion and along the western boundary of the Project site. The BAC Master Plan (2014b) notes that in some instances, it may be necessary to ensure that an obstacle is marked and/or provided with night lighting to ensure it is visible to pilots.

However, the wick drain rigs are expected to undertake works in 2017 and 2018 and as such, there will be no height restrictions in place.

13.5.2.2 Project lighting

The Project site is approximately 1.0 km from the main runway and outside the lighting zones for the main runway. However, the eastern portion of the Project site is located within Zone B, Zone C and Zone D for the future parallel runway, which is expected to be operational by 2020. Given a 24 hour working day is an option and night-time construction works are required (eg rock crushing activities), consideration will need to be given to appropriate night lighting, in accordance with CASA's *Manual of Standards Part 139 – Aerodromes (Lighting in the Vicinity of Aerodromes)*.

13.5.2.3 Project-related dust generation

While the prescribed airspace for the current and future runways could potentially be impacted if no mitigation were put in place, it is considered that the Project dust management measures will be adequate to manage dust and minimise any impacts to visibility in the prescribed airspace. In addition, a rattle-grid may be installed at the access/egress point to the Project site. Dust deposition monitoring (baseline and construction) will also be undertaken for the Project to determine whether the baseline conditions and construction conditions will be within acceptable levels listed in the EHP guidelines (2017e). If baseline and construction conditions are maintained within acceptable levels, approval to emit dust will not be required.

13.6 Mitigation measures

Table 13.3 provides a summary of the mitigations recommended to be adopted during the construction of the Project.

Table 13.3 Traffic and aviation safety mitigation measures

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Traffic				
Construction traffic is likely to have negligible impact on the operational performance of the local road network	Maintain operational performance of: ▪ Nancy Bird Way/ Moreton Drive roundabout ▪ Nancy Bird Way/ Airport Drive roundabout	▪ Preferred construction haulage routes and traffic management requirements to be determined in consultation with construction contractor ▪ Traffic Management Plan to be developed by the construction contractor and to be approved by BAC prior to commencing works ▪ Road Condition Assessment Report to be developed by the construction contractor for the proposed haul routes within Brisbane Airport. Beyond Brisbane Airport, the construction contractor must ensure haul routes are appropriate and that haulage routes and traffic movements comply with local and State legislation	Prior to construction	BAC to determine preferred haulage routes Requirements to be included in the EMP
Aviation safety				
Lighting used within the Project site may impact on pilot's visibility	Manage the use of lighting within the Project site	▪ Chapter 9 of the CASA *Manual of Standards Part 139 – Aerodromes (Lighting in the Vicinity of Aerodromes)* provides guidance on lighting at airports. This will need to be considered if BAC and the Contractor choose to undertake construction works at night-time. ▪ If plant/equipment is tall in height, it may be necessary to attach a marker or light to the top of the equipment to ensure pilot visibility of the plant/equipment. This would need to be done in accordance with the marking and lighting requirements outlined in CASA's *Manual of Standards Part 139 – Aerodromes*.	Construction	Requirements to be included in the EMP
Dust generated during construction of the Project may impact on visibility within the prescribed airspace	Monitor dust levels and adopt dust management measures during construction	▪ Undertake baseline and construction dust monitoring (as detailed in Section 8) ▪ Implement mitigation measures to manage dust during construction (as detailed in Section 8.7)	Pre-construction and construction	Requirements to be included in the EMP

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Heights of construction equipment and plant restricted by the OLS and PANS-OPS surfaces in 2020 and beyond	Ensure heights of equipment and plant used within the Project site are appropriate	■ Based on the height limitations within the Project site from 2020 and beyond, equipment and plant is to be selected to ensure it does not exceed the OLS and PANS-OPS surfaces. If plant and equipment intrudes into the OLS and PANS-OPS surfaces in 2020 and beyond (ie OLS of greater than 35 m and PANS-OPS of 50 to 98 m AHD for the north eastern portion, and PANS-OPS of 3.9 to 98 m AHD for the south western portion), an approval will need to be sought from the Secretary of the DIRD under the Airports Act. ■ BAC will need to submit details of obstacles close to or intruding into the OLS and/or PANS-OPS to CASA for hazard assessment and particular requirements for marking and lighting as per CASA's *Manual of Standards Part 139 - Aerodromes*.	Construction	Requirements to be included in the EMP

14 Landscape and visual amenity

14.1 Introduction

This section provides a summary of the landscape and visual amenity issues that will need to be considered during construction.

A range of mitigation measures are also recommended to be implemented during construction.

14.2 Methodology

A review of the relevant legislation, policies and guidelines relevant to landscape and visual amenity for the Project has been undertaken. A review of the existing landscape and visual amenity across the Project site is provided.

The existing environment conditions have indicated the potential impacts that may occur during the construction and operation of the Project.

14.3 Existing environment

The existing landscape of the Project site is a combination of casuarina plantations, interspersed by weeds (ie Lantana), mangroves along the existing drains and a grassed area in the south west portion of the Project site. The CPA is located north west of the Project site and the Brisbane Airport Services Centre is located directly north of the Project site. The International Terminal, parking and Airtrain station are located east of the Project site. Kedron Brook Floodway Drain and the new parallel runway (under construction) are located further north of the Project site.

14.4 Potential impacts

The Project will result in some impacts to visual amenity during construction, but this is likely to only impact those tenancies directly adjacent to the Project site and vehicles on Moreton Drive, Airport Drive and Nancy Bird Way. The anticipated visual impact may relate to potential dust issues, plus direct views towards the construction area, including construction plant and equipment. These impacts would be temporary and limited to the construction phase only.

14.5 Mitigation measures

Table 14.1 provides a summary of the mitigation measures to be adopted during construction of the Project.

Table 14.1 Landscape and visual amenity potential impacts and mitigation measures

Potential environmental aspect/ impact	Management objective	Action	Phase to be implemented	Outcome
Impacts on visual amenity due to dust generated by construction activities	Ensure that impacts to visual amenity to surrounding businesses/ residents is minimised	■ Implement WSUD measures (as recommended in Section 7) that complement the intents of the BAC Master Plan (2014b) ■ Implement mitigation measures as recommended in Section 8.7 in relation to air quality	Construction	To be included in the EMP

15 Conclusions and recommendations

Aurecon has prepared this EAR for the proposed Brisbane Airport Auto Mall Project, which includes design and construction of bulk earthworks to develop the land for a future proposed Auto Mall development consisting of roads, services and the test track.

If recommended mitigation and management measures are implemented, the Project clearing and earthworks will not have a significant environmental or ecological impact and will not trigger the requirements for preparing a MDP under Section 89 of the Airports Act. If mitigation measures identified in this EAR are adopted and implemented, the Project is not considered development of a kind that:

- *is likely to have significant environmental or ecological impact*
- *affects the Kingsford Smith Memorial immediately adjacent to the Project site*
- *likely to have a significant impact on the local or regional community*

The Project is considered to be consistent with the “Mixed Use” zoning for the Project site under the 2014 Master Plan (BAC 2014b).

A summary of the key actions are:

- A CEMP needs to be prepared for the Project. The Contractor shall be monitored by the BAC Environmental Advisor to determine Contractor compliance with the CEMP.
- An ESCP is to be prepared by a suitably qualified and experienced professional in accordance with the requirements of the IECA Guidelines (2008) (eg a CPESC or an RPEQ with at least two years’ experience in the management of E&SC that can be verified by an independent third party)
- A pre-clearing habitat assessment is to be conducted by a licenced and suitably qualified spotter catcher prior to construction works commencing. The spotter catcher shall remain on call during all vegetation clearing activities.
- All vehicles leaving the site will exit via the following sediment control measures:
  - Primary treatment across rock surfaced roadways of nominally 120 m for trucks and plant and a minimum 50 m for light vehicles
  - All vehicles will traverse a minimum of three rumble/ shaker grids (approximately 7.5 m in length). All vehicles will then traverse over a two part (7 m plus 13 m) mass concrete driveway separated by rock
  - As a final tertiary measure, all vehicles will travel north on Airport Drive on an existing asphalt pavement (one lane of Airport Drive, which form part of the Project site) for a minimum of 340 m allowing "within site" control of sediment
- Compliance with the requirements of the ASS Management Plan
- Should potential contaminated materials (black sands) be observed during excavation within the CSR Site 28 area, material is to be stockpiled and the BAC Environmental Advisor is to be consulted for approval of investigation and management measures (in consultation with the AEO)
- Comply with the ACM Management Plan developed for the Project in the event that ACM is encountered on site

- Future permanent flap/tidal gates may be installed at the major culverts under Moreton Drive and Nancy Bird Way to prevent backwater from tidal events, storm surges and regional flood events entering the Project site. A perimeter drain will be installed around the boundary of the Project site with catch drains to capture any sediment-laden runoff from disturbed land, bunded from external discharge during the Project land development bulk earthworks.
- Groundwater monitoring will be undertaken during filling and until excess surcharge material is removed, within the monitoring wells indicated in Figure 7.1. Groundwater will be monitored for PFAS (ultra-trace) and dissolved metals/metalloids (aluminium, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, zinc and titanium (if required)):
  - Monthly during placement of fill and surcharge activities for a period of six months or until results of monitoring have stabilised over a three month period (and provided the performance limits have been met, and continue to be met)
  - Once every six months for the remainder of fill placement and surcharge activities (provided the performance limits continue to be met)
  - Once every six months for removal of surcharge and completion of earthworks (provided the performance limits remain to be met)
- Groundwater shall be monitored for ASS within the monitoring wells indicated in Figure 7.1:
  - For one round of baseline data upon installation of any new groundwater wells
  - Monthly during placement of fill and surcharge earthworks for field measurements and every two months for laboratory analysis
  - Monthly during filling and surcharging activities for field measurements for the initial two months and monthly until groundwater level has stabilised, and every two months for laboratory analysis for at least six months and until results of monitoring stabilise over a four month period
- Samples collected during groundwater monitoring for ASS should be analysed for:
  - Field measurements: water level, pH, electrical conductivity, redox potential, total alkalinity
  - Laboratory analysis: pH, electrical conductivity, total titratable acidity, total alkalinity, dissolved iron and aluminium, dissolved ions (chloride and sulphate)
- Undertake baseline and construction air quality monitoring (dust deposition gauge) at key locations surrounding the Project site (refer Figure 7.1) to assist in proactively managing air quality issues to ensure community expectations and environmental requirements are met
- Undertake background noise monitoring at the Kingsford Smith Memorial and Brisbane Airport Services Centre at least two weeks prior to the commencement of construction. Noise monitoring at sensitive receptors during construction will be undertaken in the event of a substantiated noise complaint.
- Undertake background vibration monitoring inside or immediately outside the Kingsford Smith Memorial (on the north west side) at least two weeks prior to the commencement of construction. During vibration inducing works within 200 m of the Kingsford Smith Memorial, and if a validated complaint regarding vibration is received, vibration monitoring shall be undertaken inside or immediately outside the Kingsford Smith Memorial (on the north west side) to ensure that vibration levels are kept below 5 mm/s in consultation with the BAC Environmental Advisor.
- Prior to the commencement of Project works, conduct a building assessment on the Kingsford Smith Memorial and repair/replace all door seals and building joints as required
- Contractor to comply with lighting requirements recommended in Part 139 of the *Manual of Standards – Aerodromes: Section 9*. For example, lights shall be installed and screened in such a way that no light is directly transmitted above a horizontal plane through the light source.
- Undertaking consultation with neighbouring stakeholders about the Project generally, in accordance with Section 10.6 of this EAR

It is essential that the Project adopts mitigation measures as recommended to ensure all environmental obligations under the relevant legislation will be complied with. If these recommended mitigation measures are adopted, it is considered that BAC can conduct Project works in a manner

that will satisfy relevant statutory goals and criteria to allow BAC to comply with their obligations under relevant legislation.

Accordingly, this EAR concludes that the Project will have minimal impact on the environment and heritage matters if recommended mitigation and management measures are implemented.

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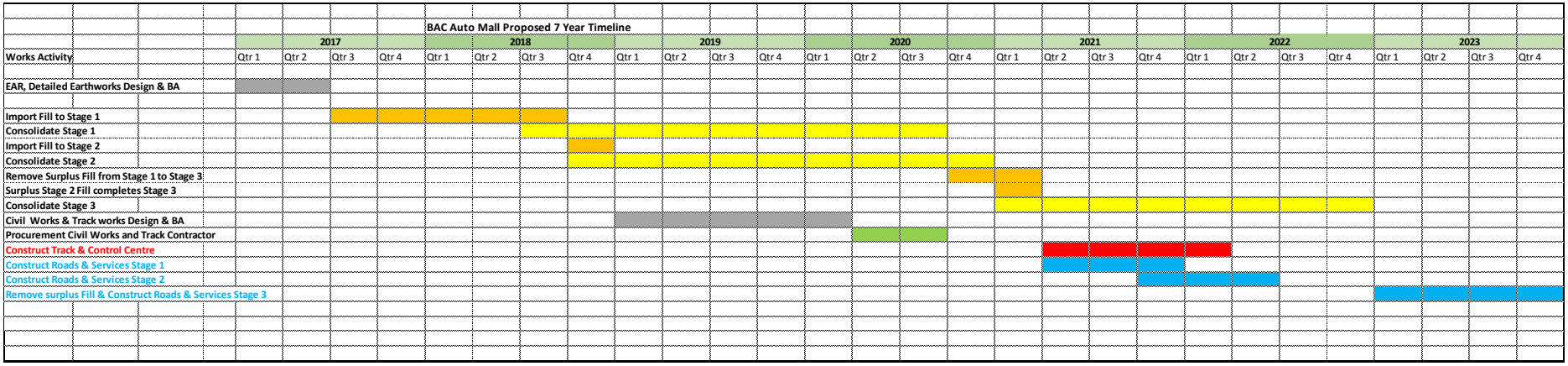
Appendices

Appendix A
Proposed program

Auto Mall Development Proposed Program



Appendix B
Project compliance tables

Table 1 Development control guidelines relevant to the Project

Performance criteria	Controls	Comments
P1. Development is to be designed and located to achieve an acceptable level of flood immunity	C1.1 Advice on a site Minimum Development Level (MDL) should be sought from BAC before an application is lodged. Further consideration for building floor level is to include a variable height to address ground settlement. Contact the Airport Approvals Manager for further details.	To achieve 1:100 year flood immunity, the surrounding roads need to be raised by up to 500 mm. These road systems combined with flap gates installed on a number of major culvert crossings will prevent backwater from regional flood events and storm surge/tidal events entering the Project site. Refer Section 3.5 of the EAR for further details.
P13. Utility placement is integrated into site planning	C13.1 Utility placement is to be provided for the proposed development site and constructed to relevant standards and in accordance with BAC's Engineering Technical Guidelines. C13.2 A comprehensive communications network has been installed throughout the Airport Precincts. Refer to the Airport Approvals Manager for advice on connecting to telecommunication service providers.	The designer will be responsible for ensuring that utilities are placed appropriately on the Project site.
P15. Site planning should prevent the impacts upon underground services	C15.1 Ensure the site layout avoids, where possible, building over any underground services. C15.2 Where the development is proposed to be built over existing utilities, approval will be needed from BAC before the development application is lodged. C15.3 Refer to the ASCON (**As Con**structed) database for information on identifying easements, utilities and existing features. A copy of the ASCON database can be made available on request. BAC has developed a set of standards for the installation of utilities. Figure 6 (in the DCD) provides the preferred layout for roads and services reserves, including space for streetlights, stormwater, footpath, recycled water, sewer, water and power.	There are a number of existing underground services within the Project site, including the Energex high voltage cable (refer Section 4.4.3). There is the potential for the Project to impact on these services, which will need to be managed through detailed design.
P27. Traffic access should be designed to create a safe and functional environment	C27.1 Access to the site satisfies the following: (a) Provide for safe entering sight distance requirements in accordance with AUSTROAD Standards (b) Provide for pedestrian and cyclist requirements, where required (c) Be clear from bus stops, taxi ranks, traffic control devices and significant trees. C27.2 Any vehicle loading and servicing waste removal bays are located to be concealed and screened from view, from a public area. C27.3 Driveways are to be located as far as possible from intersections as follows in Table 4. **Table 4 Minimum separation for driveways**	The designer will be responsible for ensuring adherence to these access requirements. A Traffic Management Plan will be required to be developed by the Construction Contractor.

Performance criteria	Controls	Comments

Type of frontage road	Adjacent feature	Minimum separation of driveway from adjacent feature
Local access	Local access intersection	20 m from intersection
	Suburban road intersection	20 m from intersection
	Median break	20 m from median nose
	Traffic signals	Clear of queue areas and turning lanes
Suburban	Local access intersection	30 m from intersection
	Suburban road intersection	60 m from intersection
	Median break	30 m from median nose
	Traffic signals	Clear of queue areas and turning lanes

(**Source:** adapted from Transport, Access, Parking and Servicing Planning Scheme Policy, Brisbane City Council, Brisbane City Plan 2000).

C27.4 Direct frontage access will not be permitted off Moreton Drive and limited on other roads.

C27.5 Refer to Attachment A for road cross sections at specific locations across airport.

C27.6 All driveways are to be located and constructed so as to provide sight distances not less than those shown in Table 5 below. The driveways are measured from a point 5 m outside the edge of the through carriageway as shown in Figure 7 (of the DCD). Driveway to be designed as a standard crossover in accordance with relevant AUSTROADS standards.

Table 5 Minimum sight distances

Speed environment (kph)	Sight distance (m)
50	90
60	110
70	130
80	150

(**Source:** adapted from Roads Planning and Design Manual, Chapter 13, October 2006, Department of Transport and Main Roads).

C27.6 A Traffic Management Plan (TMP) is required for construction works that will affect the BAC road network and is lodged with BAC prior to the request for work permit (note: Permit to Work Corporate Standard and Permit Form is available at Brisbane Airport's website). A TMP is to be prepared in accordance with the Manual of Uniform Traffic Control Devices (MUTCD) Part 3 (DTMR, Fourth Issue, 30 April 2010).

Performance criteria	Controls	Comments
P39. The storage of hazardous or flammable materials is not to endanger the site, building, neighbouring tenants or people.	C39.1 Any development storing hazardous or flammable materials should undertake a hazard, identification and risk analysis and prepare a safety/hazard management plan. C39.2 All storage areas are to be secured and signed appropriately and in accordance with relevant Australian Standards.	The storage of hazardous and flammable materials shall be managed in accordance with applicable Australian Standards during construction of the Project.
P40. Ensure the quality of water is managed and reasonable and practicable measures undertaken to prohibit pollution and/or contamination (both solid and liquid) from directly or indirectly entering the storm water system.	C40.1 Stormwater drainage from the site is of an acceptable quality and volume to prevent harmful impacts on receiving waters. All stormwater leaving the site is to achieve the following minimum reductions in total pollutant load, compared to untreated stormwater runoff: ■ 80% reduction in Total Suspended Solids ■ 60% reduction in Total Phosphorus ■ 45% reduction in Total Nitrogen ■ 90% reduction in Gross Pollutants/litter ■ Hydrocarbons – visible sheen or odour. (Source: WSUD Technical Design Guidelines for South East Queensland). C40.2 Stormwater discharge points are to be located so that they do not adversely impact on areas of ecological value, or cause nuisance or damage to adjoining properties C40.3 Water Sensitive Urban Design (WSUD) principles should be achieved on site. Stormwater and other site runoff are to be appropriately treated and managed on site by use of devices, such as pollutant traps, settling ponds, retention basins and swales. C40.4 A Site-Based Stormwater Management Plan should be prepared and provide for: ■ An acceptable level of flood immunity ■ Public safety and risk management measures ■ Erosion and sediment control ■ WSUD alternatives in parallel with site landscaping. For guidance on preparing a Site-Based Stormwater Management Plan refer to the Airport Approvals Manager. C40.5 Refer to the 2009 Landscape Master Plan for acceptable WSUD species on-airport and the SEQ Healthy Waterways 2006, Water Sensitive Urban Design, Technical Design Guidelines for South East Queensland. C40.6 The Airport Approvals Manager may require arrangements to be made between the proponent and an adjoining lessee to facilitate appropriate stormwater management arrangements.	Stormwater leaving the site during construction of the Project will need to be managed in accordance with applicable guidelines and managed through the adoption of management measures recommended in this EAR. The designer will be responsible for ensuring that future development on the Project site adopts WSUD principles.

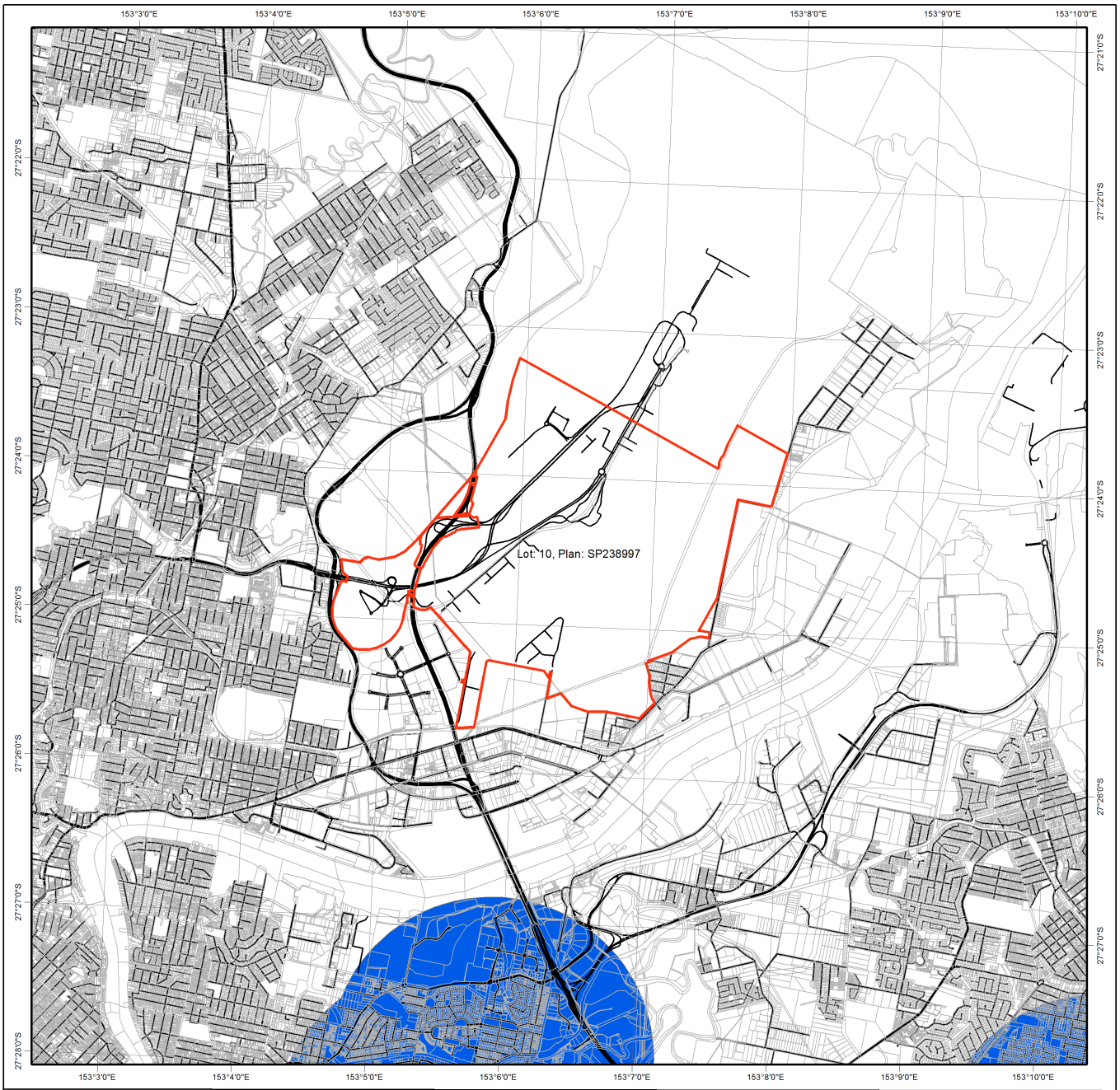
Performance criteria	Controls	Comments
P41. Building height or structure is not to intrude into the Obstacle Limitation Surface (OLS) or result in sight line obstruction to the Runway and Taxiway system.	C41.1 Building and structures, including any appurtenances (aerials, spires etc.), should not encroach the prescribed airspace. The aim of the OLS is to ensure the safe operation of aircraft. If a building height is more than 15 metres above ground, advice should be sought from the Airport Approvals Manager before an application is lodged. Buildings higher than 15 metres may require further assessment depending on the location and prescribed airspace at the location. Separate approval will be required for all cranage operations. C41.2 Building height in the vicinity of the Control Tower must maintain air traffic control sightlines to the runway, taxiway and apron areas. Please contact the Airport Approvals Manager during the design phase to confirm requirements for sight line assessments.	Section 13 of the EAR provides an assessment of the potential impacts to the OLS. If plant and equipment intrudes into the OLS and PANS-OPS surfaces, an approval will need to be sought from the Secretary of DIRD under the Airports Act.
P42. Developments should not constitute a safety hazard to aviation operations.	C42.1 Mitigation of emissions from dust, smoke, liquid and gas vapour or particulate matters that may adversely affect airport's operational airspace must be addressed. This includes gas/discharge plumes from industry with a velocity exceeding 4.3 m/sec (at the point of emission) or likely to cause visibility problems, may be classified as a 'controlled activity'. Development should not create an artificial light source (eg laser lights) or reflect sunlight. C42.2 If cranes are to be used for construction, under the *Airports (Protection of Airspace) Regulations*, approval will need to be sought from the Airport Approvals Manager.	Mitigation measures outlined in this EAR (refer Section 8) will be adopted during construction to manage air quality impacts. An assessment of the potential impacts of lighting and height of structures (eg cranes, wick drain rigs) during construction of the Project has been undertaken in Section 13. The Contractor will need to ensure that any approvals are obtained prior to the commencement of construction.
P43. Lighting of the development and streetscape is not to impact on the operation of the airport.	C43.1 Lighting is to comply with the Civil Aviation Safety Authority (CASA) Manual of Standards – Part 139, Section 9.21 – Lighting in the Vicinity of Aerodromes.	An assessment of the potential impacts of lighting and recommended mitigation measures for the Project is provided in Section 13.

Table 2 Compliance of the Project with the Airport Technical Guidelines

Section of Airport Technical Guidelines	Requirements	Project compliance
3.1 Environmental Requirements	There are specific requirements in relation to environmental management on Brisbane Airport related to: (a) Regulations and Legislation (b) Construction Environmental Management Plans (CEMP) (c) Review and Approval Process	This EAR demonstrates the Project's compliance with the relevant regulations and legislation. A CEMP will need to be prepared for the Project prior to construction, addressing the recommended measures outlined in this EAR.
3.1.1 Acid sulfate soils (ASS)	A detailed ASS investigation is required if the Project is anticipated to excavate more than 100 m^3 of soil, or imports more than 500 m^3 of soil.	An ASS investigation has been conducted with details provided in Section 6 of this EAR.
3.1.2 Red Imported Fire Ants (RIFA)	Adoption of management controls for high risk activities (eg earthmoving activities, rotating stockpiles) must be implemented to help prevent the spread of fire ants.	The Project site is located within Fire ant biosecurity zone 3. As such, there are restrictions on the movements of fire ant carriers (eg soil, mulch, turf, potted plants etc).
3.1.3 Contaminated sites	Prior to the commencement of any design works, the BAC Project Manager is to be consulted with regards to the Contaminated Sites Register. Any development on contaminated land must be designed accordingly.	A contaminated land investigation has been conducted with details provided in Section 6 of the EAR.
3.1.4 Erosion and sediment control	Where the project involves the disturbance of soils, an Erosion and Sediment Control Plan (ESCP) must be developed in accordance with the Best Practice Erosion and Sediment Control manual (IECA 2008).	The Project will require the development of an ESCP by a Certified Erosion and Sediment Control Professional. This is discussed in further detail in Sections 5 and 7 of the EAR.
3.1.5 Water quality monitoring	Details of a surface and groundwater monitoring program (where applicable) are to be discussed with BAC during the project design phase. Provisions are also to be made with regards to dewatering activities specifically excavations and sediment basin operation. Water quality is to comply with the AEPR.	The Project will require surface and groundwater monitoring to be undertaken (refer Section 7 of the EAR for further detail).
3.2 Site geology	There is the potential for differential settlement to occur given the nature of the airport's reclaimed ground.	A geotechnical investigation has been conducted (refer Section 5). The Designer will need to consider the effects that settlement will have on the development of the Project (eg consider proposed use and loadings on the site).
3.3 Preparation of documentation	All design documentation must be prepared in accordance with BAC's Specification for Drafting and As-built Project Documentation.	This will be the responsibility of the Designer to ensure that all design and as-constructed information is submitted in the appropriate form for BAC's approval.
3.4 Survey and set-out	Brisbane Airport utilises a site specific Aerodrome Datum as the basis for all survey control.	The Designer will need to consider this when undertaking the detailed design of the Project site.
3.5 As-Built and As-Constructed project documentation	All projects must submit all As-Built and As-Constructed information in order to obtain a Completion Certificate from the Airport Building Controller.	This EAR does not involve the development of as-built and as-constructed information. Therefore, this requirement is not applicable until the design phase.

Section of Airport Technical Guidelines	Requirements	Project compliance
3.6 Height Restrictions	Legislation controls the height of structures (temporary or permanent) on and around Brisbane Airport.	Discussion regarding height of temporary structures used during construction of the Project is provided in Section 13 of this EAR.
3.8 Protection of Services	At any point at which a construction road, or construction traffic, crosses the line of an existing underground service, protection to the service from damage shall be provided.	A number of services have been identified within/adjacent to the project area (refer Section 4). It will be the responsibility of the Designer to ensure that impacts to services are mitigated and managed appropriately.
3.9 Temporary construction services	All temporary electrical services, water, sewer and recycled water must be installed and paid by the Contractor.	This will be the responsibility of the Contractor during construction of the Project.
3.10 Traffic management	All works shall facilitate the safe and orderly passage of vehicular and pedestrian traffic through and around the site at all times from the commencement of work on the site to the completion of works.	Traffic management is discussed in Section 13 of this EAR.
3.12 Lighting of night work	Details of the proposed temporary lighting of works are to be submitted to BAC for approval. The Contractor is responsible for ensuring that the requirements as stipulated in Section 9 of the CASA Manual of Standards Part 139 are adhered to at all times during the works.	Details regarding temporary lighting are provided in Section 13.
4. Safety in design	Designers are to undertake all practicable measures to minimise the risk to safety during the design phase. For example, all designers and contractors working on airport projects are to undertake, as part of the design process, a Safety in Design assessment.	The Designer will be responsible for ensuring that the Project is compliant with the applicable safety standards.
5. Sustainability in design and construction	All designers and contractors working on airport projects are to undertake, as part of the design process, a Design Sustainability Statement.	The Designer will be responsible for adopting sustainability elements as part of the Project's design. A range of measures are suggested in the Airport Technical Guidelines.

Appendix C
Ecological desktop searches



Protected Plants Flora Survey Trigger Map

Legend

- Lot and Plan
- High risk area
- Cadastral line
  Property boundaries shown are provided as a locational aid only
- Freeways / motorways / highways
- Secondary roads / streets

N

0 490 980 1,470 1,960 2,450 m

This product is projected into:
GDA 1994 Queensland Albers

This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Heritage Protection at palm@ehp.qld.gov.au

Disclaimer:
While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

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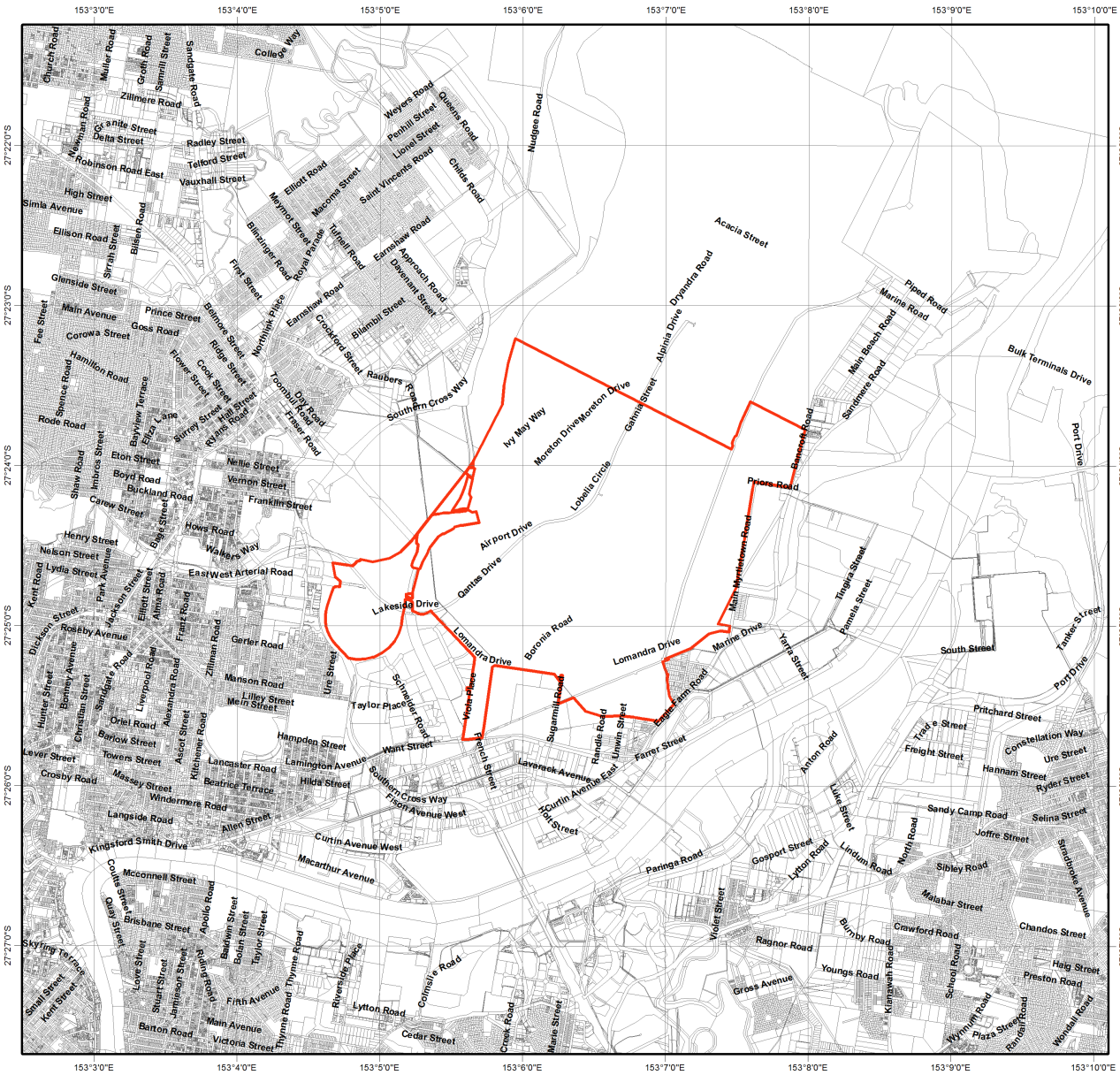


Map of Referable Wetlands
Wetland Protection Areas

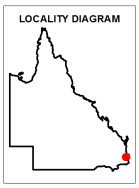
Lot and Plan

Cadastral Boundary

Wetland Protection Areas

Wetland

Trigger Area



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Note:
This map shows the location of wetland protection areas which are defined under the Environmental Protection Regulation 2008. Within wetland protection areas, certain types of development involving high impact earthworks are made assessable under Schedule 3 of the Sustainable Planning Regulation 2009.

The Department of State Development Infrastructure and Planning is the State Assessment Referral Agency (SARA) under Schedule 7 of the Sustainable Planning Regulation 2009 for assessable development involving high impact earthworks within wetland protection areas. The Department of Environment and Heritage Protection is a technical agency.

The policy outcome and assessment criteria for assessing these applications are described in the State Development Assessment Provisions (SDAP) *Module 11: Wetlands and wild rivers.*

This map is produced at a scale relevant to the size of the lot on plan identified and should be printed at A4 size in portrait orientation. Consideration of the effects of mapped scale is necessary when interpreting data at a large scale.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Heritage Protection at www.ehp.qld.gov.au or email planning.support@ehp.qld.gov.au.

0 680 1360 2040 2720 3400 m

This product is projected into GDA 1994 MGA Zone 56

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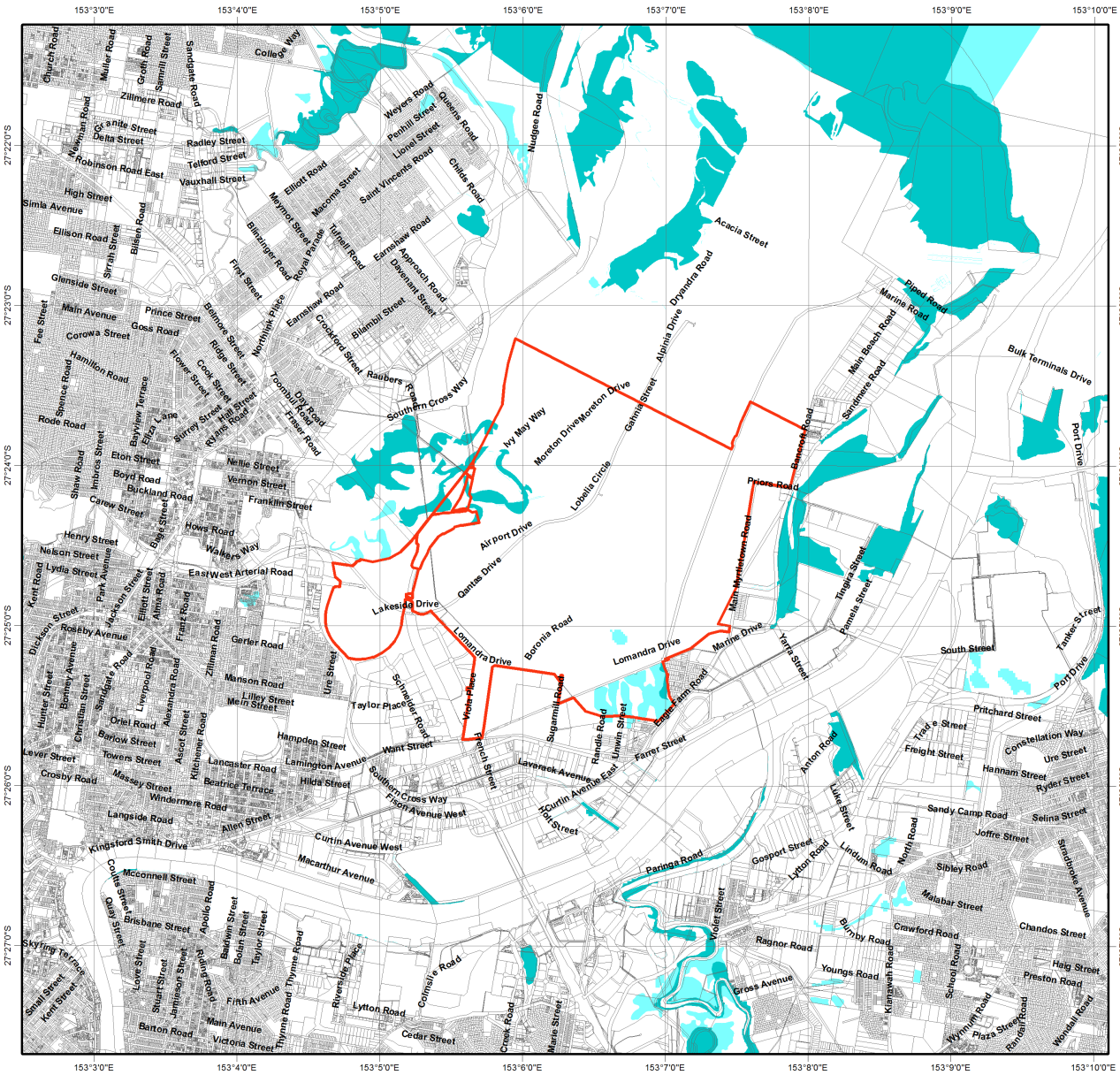
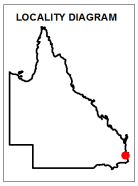


Map of Referable Wetlands for the Environmental Protection Act 1994

- Lot and Plan
- Cadastral Boundary
- HES Wetland
- GES Wetland

LOCALITY DIAGRAM



N

Note:
This map shows the location of wetlands on the Map of Referable Wetlands which are defined under the Environmental Protection Regulation 2008.

Wetlands are assessed for ecological significance using the environmental values for wetlands in section 81A of the Environmental Protection Regulation 2008. Wetlands are considered either High Ecological Significance (HES) or of General Ecological Significance (GES) for the purposes of the environmental values.

This map is produced at a scale relevant to the size of the lot on plan identified and should be printed at A4 size in portrait orientation. Consideration of the effects of mapped scale is necessary when interpreting data at a large scale.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Heritage Protection at <www.ehp.qld.gov.au> or email <planning.support@ehp.qld.gov.au>

0 680 1360 2040 2720 3400 m

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Department of the Environment and Energy

EPBC Act Protected Matters Report

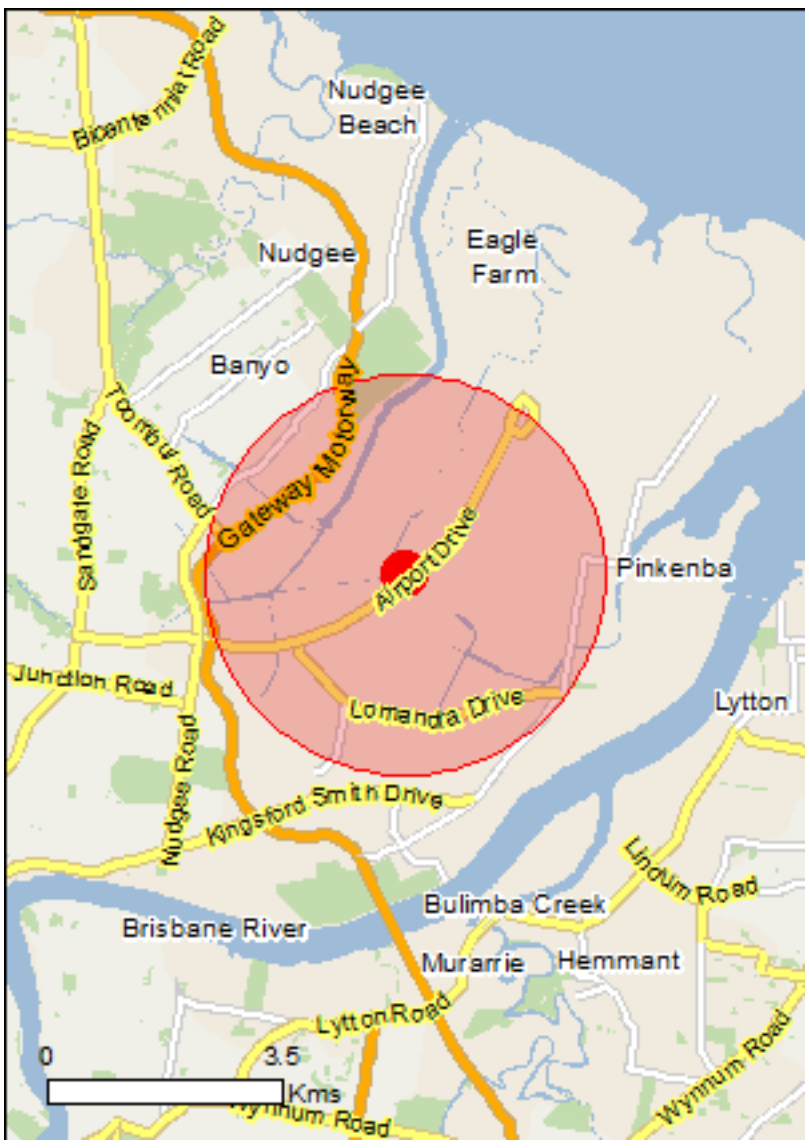
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 01/03/17 15:36:18

- Summary
- Details
  - Matters of NES
  - Other Matters Protected by the EPBC Act
  - Extra Information
- Caveat
- Acknowledgements



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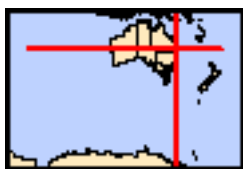
Coordinates

Buffer: 3.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	32
Listed Migratory Species:	14

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	22
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	43
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Moreton bay	Within 10km of Ramsar

Listed Threatened Ecological Communities		[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.		
Name	Status	Type of Presence
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species

Name	Status	Type of Presence
		habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Poephila cincta cincta Southern Black-throated Finch [64447]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [331]	Endangered	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
Plants		
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area
Cryptocarya foetida Stinking Cryptocarya, Stinking Laurel [11976]	Vulnerable	Species or species habitat may occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat may occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat likely to occur within area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat likely to occur within area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Saiphos reticulatus Three-toed Snake-tooth Skink [88328]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species

[Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Defence - DAMASCUS BARRACKS - MEEANDAH

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Breeding likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

Invasive Species

[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Annona glabra Pond Apple, Pond-apple Tree, Alligator Apple, Bullock's Heart, Cherimoya, Monkey Apple, Bobwood, Corkwood [6311]		Species or species habitat may occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus africanus Climbing Asparagus, Climbing Asparagus Fern [66907]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Cryptostegia grandiflora Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Hymenachne amplexicaulis Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass [31754]		Species or species habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Parthenium hysterophorus Parthenium Weed, Bitter Weed, Carrot Grass, False		Species or species

Name	Status	Type of Presence
Ragweed [19566]		habitat likely to occur within area
Prosopis spp. Mesquite, Algaroba [68407]		Species or species habitat likely to occur within area
Protasparagus densiflorus Asparagus Fern, Plume Asparagus [5015]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-27.4034 153.1025

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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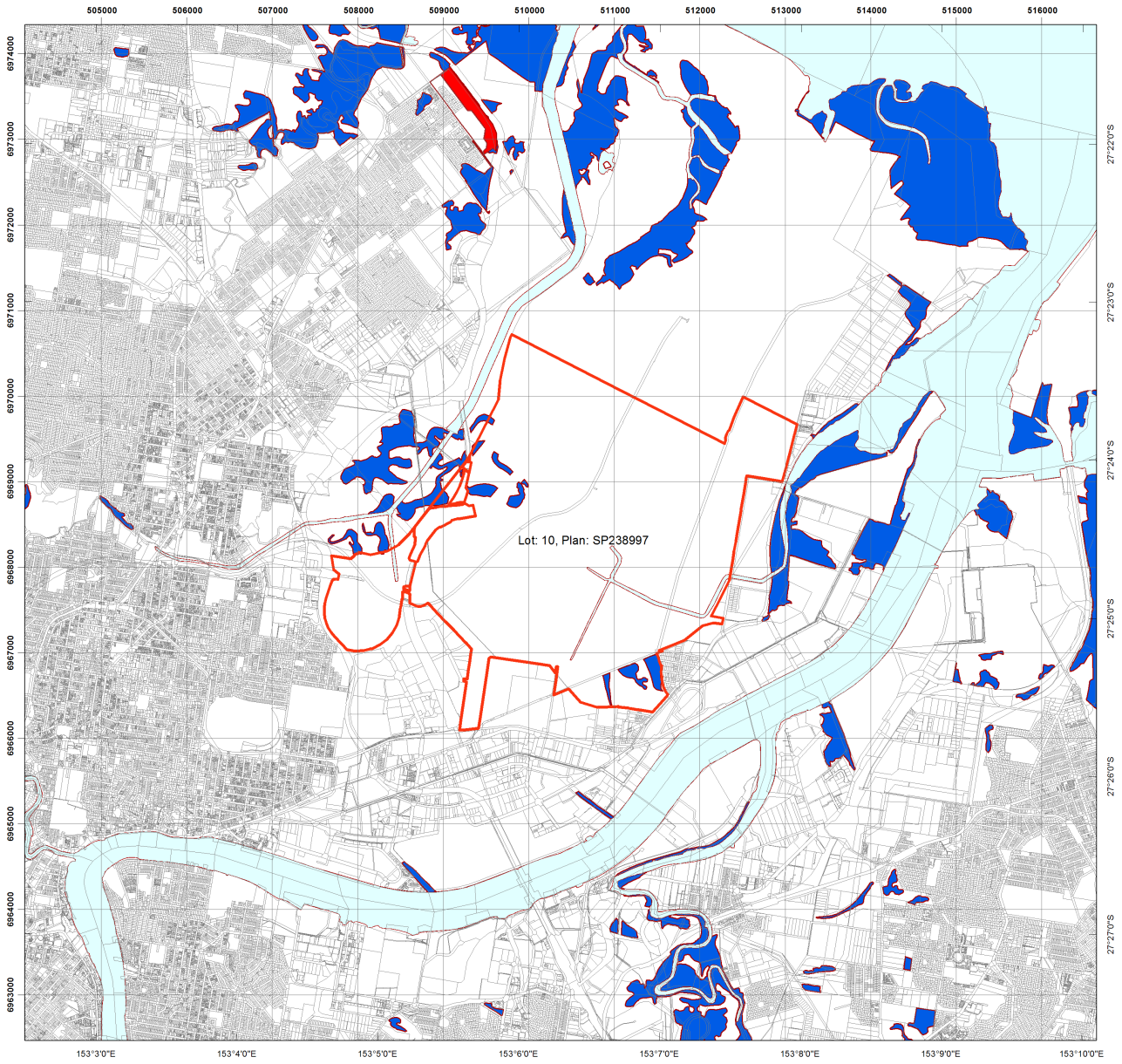
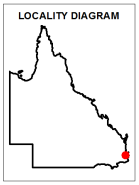


Regulated Vegetation Management Map

Legend

- Lot and Plan
- Category A area (Vegetation offsets/compliance notices/VDecs)
- Category B area (Remnant vegetation)
- Category C area (High-value regrowth vegetation)
- Category R area (Reef regrowth watercourse vegetation)
- Category X area (Exempt on Freehold, Indigenous and Leasehold land)
- Water
- Area not categorised
- Cadastral line
- Property boundaries shown are provided as a locational aid only

LOCALITY DIAGRAM



N

0 680 1,360 2,040 2,720 3,400 m

This product is projected into:
GDA 1994 MGA Zone 56

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Natural Resources and Mines makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incurr as a result of the product being inaccurate or incomplete in any way and for any reason.

Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.dnrm.qld.gov.au or contact the Department of Natural Resources and Mines.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.

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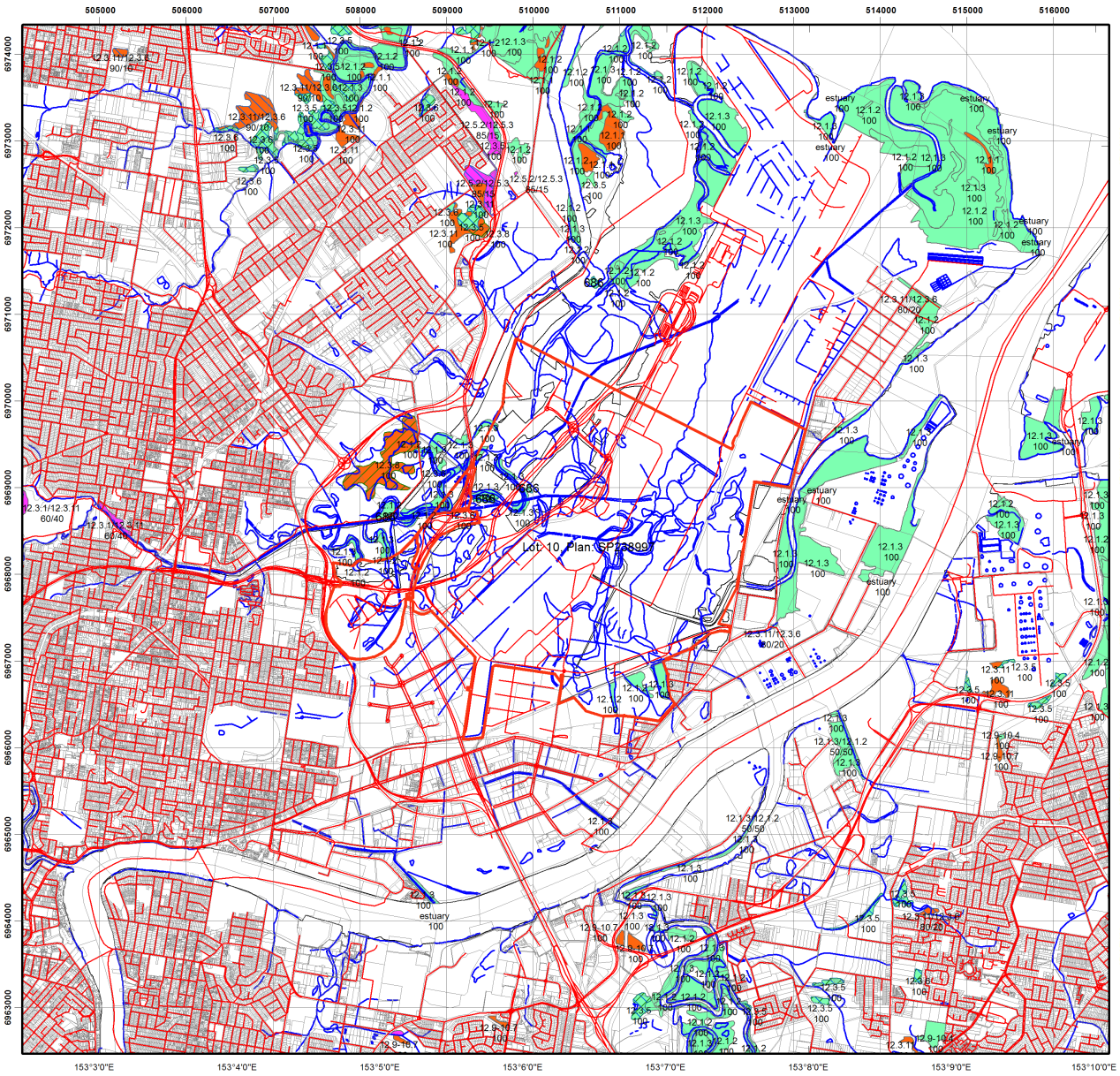

Vegetation Management Supporting Map

Legend

- Lot and Plan
- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category A or B area containing remnant vegetation
- Category A or B area under Section 20AH
  These areas are edged in yellow and filled with the remnant RE Status
- Category C area containing endangered regional ecosystems
- Category C area containing of concern regional ecosystems
- Category C area that is a least concern regional ecosystem
- Category C area containing high value regrowth vegetation
- Category C area under Section 20AI
  These areas are edged in purple and filled with the remnant RE Status
- Non Remnant
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourse on the vegetation management watercourse and drainage feature map
  (Stream order shown as black number against stream where available)
- Roads
- National Parks, State Forest and other reserves
- Cadastral line
  Property boundaries shown are
  provided as a locational aid only

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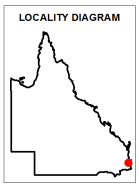
LOCALITY DIAGRAM



N

0 490 980 1,470 1,960 2,450 m

This product is projected into:
GDA 1994 MGA Zone 56

Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

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While every care is taken to ensure the accuracy of this product, the Department of Natural Resources and Mines makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incurr as a result of the product being inaccurate or incomplete in any way and for any reason.

Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.dnrm.qld.gov.au or contact the Department of Natural Resources and Mines.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

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Vegetation Management Act 1999 - Extract from the essential habitat database

Essential habitat is required for assessment under the:

- State Development Assessment Provisions - Module 8: Native vegetation clearing which sets out the matters of interest to the state for development assessment under the *Sustainable Planning Act 2009*; and
- Self-assessable vegetation clearing codes made under the *Vegetation Management Act 1999*

Essential habitat for one or more of the following species is found on and within 1.1 km of the identified subject lot/s or on and within 2.2 km of an identified coordinate on the accompanying essential habitat map.

This report identifies essential habitat in Category A, B and Category C areas.

The numeric labels on the essential habitat map can be cross referenced with the database below to determine which essential habitat factors might exist for a particular species.

Essential habitat is compiled from a combination of species habitat models and buffered species records.

The Department of Natural Resources and Mines website (http://www.dnrm.qld.gov.au) has more information on how the layer is applied under the State Development Assessment Provisions - Module 8: Native vegetation clearing and the *Vegetation Management Act 1999*.

Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated.

Essential habitat, for protected wildlife, means a category A area, a category B area or category C area shown on the regulated vegetation management map-

1) (a) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database; or
2) (b) in which the protected wildlife, at any stage of its life cycle, is located.

Essential habitat identifies endangered or vulnerable native wildlife prescribed under the *Nature Conservation Act 1994*.

Essential habitat in Category A and B (Remnant vegetation species record) areas:1100m Species Information

(no results)

Essential habitat in Category A and B (Remnant vegetation species record) areas:1100m Regional Ecosystems Information

(no results)

Essential habitat in Category A and B (Remnant vegetation) areas:1100m Species Information

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
686	Crinia tinnula	Wallum Froglet	V	Vegetation community is a mandatory essential habitat factor for this species. Permanent to ephemeral acidic (pH 4.3 - 5.2), soft freshwater in Melaleuca (e.g. M. quinquenervia) swamps, sedgeland, wet and dry heathland (e.g. Banksia robur, Xanthorrhoea) and wallum (Banksia aemula shrubland/woodland) areas coastal lowlands on sand or sandstone, occasionally in adjacent open forest/woodland (e.g. Eucalyptus racemosa, Corymbia citriodora) with heathy understorey; known to persist in small remnants (<10ha); may be found well away from water.	Sea level to 200m.	Sandy and sandy-alluvial substrates.	None

Essential habitat in Category A and B (Remnant vegetation) areas:1100m Regional Ecosystems Information

Label	Regional Ecosystem (this is a mandatory essential habitat factor, unless otherwise stated)
686	12.2.5, 12.2.7, 12.2.9, 12.2.10, 12.2.12, 12.2.15, 12.3.4, 12.3.5, 12.3.6, 12.3.12, 12.3.14, 12.5.10. These regional ecosystems are not a mandatory essential habitat factor for this species.

Essential habitat in Category C (High value regrowth vegetation) areas:1100m Species Information

(no results)

Essential habitat in Category C (High value regrowth vegetation) areas:1100m Regional Ecosystems Information

(no results)

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Wildlife Online Extract

Search Criteria:	Species List for a Specified Point
	Species: All
	Type: All
	Status: All
	Records: All
	Date: Since 1980
	Latitude: -27.4034
	Longitude: 153.1025
	Distance: 3
	Email: chris.schell@aurecongroup.com
	Date submitted: Wednesday 01 Mar 2017 14:34:04
	Date extracted: Wednesday 01 Mar 2017 14:40:07

The number of records retrieved = 258

Disclaimer

As the DSITIA is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

The State of Queensland does not invite reliance upon, nor accept responsibility for this information. Persons should satisfy themselves through independent means as to the accuracy and completeness of this information.

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Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			4
animals	amphibians	Hylidae	*Litoria caerulea*	common green treefrog		C		3
animals	amphibians	Hylidae	*Litoria gracilenta*	graceful treefrog		C		4
animals	amphibians	Hylidae	*Litoria fallax*	eastern sedgefrog		C		2
animals	amphibians	Hylidae	*Litoria latopalmata*	broad palmed rocketfrog		C		1
animals	amphibians	Limnodynastidae	*Limnodynastes peronii*	striped marshfrog		C		8
animals	amphibians	Limnodynastidae	*Limnodynastes tasmaniensis*	spotted grassfrog		C		3
animals	amphibians	Myobatrachidae	*Crinia parinsignifera*	beeping froglet		C		1
animals	birds	Acanthizidae	*Gerygone levigaster*	mangrove gerygone		C		35
animals	birds	Acanthizidae	*Sericornis frontalis*	white-browed scrubwren		C		1
animals	birds	Acanthizidae	*Sericornis magnirostra*	large-billed scrubwren		C		1
animals	birds	Acanthizidae	*Gerygone olivacea*	white-throated gerygone		C		2
animals	birds	Acanthizidae	*Acanthiza pusilla*	brown thornbill		C		1
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		69
animals	birds	Accipitridae	*Haliaeetus leucogaster*	white-bellied sea-eagle		C		9
animals	birds	Accipitridae	*Hieraaetus morphnoides*	little eagle		C		1
animals	birds	Accipitridae	*Pandion cristatus*	eastern osprey		SL		24
animals	birds	Accipitridae	*Elanus axillaris*	black-shouldered kite		C		77
animals	birds	Accipitridae	*Circus assimilis*	spotted harrier		C		6
animals	birds	Accipitridae	*Haliastur indus*	brahminy kite		C		54
animals	birds	Accipitridae	*Milvus migrans*	black kite		C		1
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		1
animals	birds	Accipitridae	*Aviceda subcristata*	Pacific baza		C		1
animals	birds	Accipitridae	*Accipiter fasciatus*	brown goshawk		C		5
animals	birds	Accipitridae	*Accipiter novaehollandiae*	grey goshawk		C		1
animals	birds	Accipitridae	*Accipiter cirrocephalus*	collared sparrowhawk		C		1
animals	birds	Accipitridae	*Circus approximans*	swamp harrier		C		20
animals	birds	Accipitridae	*Lophoictinia isura*	square-tailed kite		C		1
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		C		8
animals	birds	Alaudidae	*Mirafra javanica*	Horsfield's bushlark		C		1
animals	birds	Anatidae	*Malacorhynchus membranaceus*	pink-eared duck		C		2
animals	birds	Anatidae	*Stictonetta naevosa*	freckled duck		C		2
animals	birds	Anatidae	*Dendrocygna eytoni*	plumed whistling-duck		C		1
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		17
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		86
animals	birds	Anatidae	*Aythya australis*	hardhead		C		9
animals	birds	Anatidae	*Anas rhynchotis*	Australasian shoveler		C		2
animals	birds	Anatidae	*Cygnus atratus*	black swan		C		41
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		42
animals	birds	Anatidae	*Anas castanea*	chestnut teal		C		105
animals	birds	Anatidae	*Anas platyrhynchos*	northern mallard	Y			1
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		50
animals	birds	Apodidae	*Aerodramus terraereginae*	Australian swiftlet		C		1
animals	birds	Ardeidae	*Ardea intermedia*	intermediate egret		C		50
animals	birds	Ardeidae	*Egretta garzetta*	little egret		C		39/1
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		C		82

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Ardeidae	*Nycticorax caledonicus*	nankeen night-heron		C		11
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		102
animals	birds	Ardeidae	*Ardea pacifica*	white-necked heron		C		6
animals	birds	Ardeidae	*Bubulcus ibis*	cattle egret		C		44
animals	birds	Ardeidae	*Butorides striata*	striated heron		C		20
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		26
animals	birds	Artamidae	*Cracticus sp.*					1
animals	birds	Artamidae	*Cracticus tibicen*	Australian magpie		C		25
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		7
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		17
animals	birds	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow		C		13
animals	birds	Burhinidae	*Burhinus grallarius*	bush stone-curlew		C		1
animals	birds	Cacatuidae	*Nymphicus hollandicus*	cockatiel		C		1
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		14
animals	birds	Cacatuidae	*Cacatua sanguinea*	little corella		C		6
animals	birds	Cacatuidae	*Cacatua tenuirostris*	long-billed corella	Y	C		8
animals	birds	Cacatuidae	*Eolophus roseicapilla*	galah		C		18
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		28
animals	birds	Campephagidae	*Coracina tenuirostris*	cicadabird		C		5
animals	birds	Campephagidae	*Lalage leucomela*	varied triller		C		3
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		111
animals	birds	Charadriidae	*Pluvialis fulva*	Pacific golden plover		SL		3
animals	birds	Charadriidae	*Vanellus tricolor*	banded lapwing		C		1
animals	birds	Charadriidae	*Charadrius mongolus*	lesser sand plover		SL	E	1
animals	birds	Charadriidae	*Elseyornis melanops*	black-fronted dotterel		C		23
animals	birds	Charadriidae	*Erythrogonys cinctus*	red-kneed dotterel		C		32
animals	birds	Charadriidae	*Pluvialis squatarola*	grey plover		SL		3
animals	birds	Charadriidae	*Charadrius ruficapillus*	red-capped plover		C		21
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		13
animals	birds	Ciconiidae	*Ephippiorhynchus asiaticus*	black-necked stork		C		1
animals	birds	Cisticolidae	*Cisticola exilis*	golden-headed cisticola		C		23
animals	birds	Climacteridae	*Cormobates leucophaea*	white-throated treecreeper		C		2
animals	birds	Columbidae	*Columba livia*	rock dove	Y			12
animals	birds	Columbidae	*Geopelia striata*	peaceful dove		C		2
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		17
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		10
animals	birds	Columbidae	*Ptilinopus magnificus*	wompoo fruit-dove		C		1
animals	birds	Columbidae	*Macropygia amboinensis*	brown cuckoo-dove		C		3
animals	birds	Columbidae	*Streptopelia chinensis*	spotted dove	Y			19
animals	birds	Columbidae	*Leucosarcia melanoleuca*	wonga pigeon		C		1
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		6
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		47
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		4
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		7
animals	birds	Cuculidae	*Cacomantis flabelliformis*	fan-tailed cuckoo		C		6
animals	birds	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo		C		3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Cuculidae	*Chalcites minutillus barnardi*	little bronze-cuckoo		C		1
animals	birds	Cuculidae	*Chalcites lucidus*	shining bronze-cuckoo		C		1
animals	birds	Cuculidae	*Chalcites basalis*	Horsfield's bronze-cuckoo		C		1
animals	birds	Cuculidae	*Cacomantis variolosus*	brush cuckoo		C		3
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		19
animals	birds	Estrildidae	*Lonchura punctulata*	nutmeg mannikin	Y			1
animals	birds	Estrildidae	*Lonchura castaneothorax*	chestnut-breasted mannikin		C		15
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		8
animals	birds	Estrildidae	*Neochmia temporalis*	red-browed finch		C		1
animals	birds	Falconidae	*Falco peregrinus*	peregrine falcon		C		7
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		26
animals	birds	Falconidae	*Falco longipennis*	Australian hobby		C		8
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		16
animals	birds	Fringillidae	*Carduelis carduelis*	European goldfinch	Y			1
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		11
animals	birds	Halcyonidae	*Todiramphus sordidus*	Torresian kingfisher		C		1
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		6
animals	birds	Halcyonidae	*Todiramphus macleayii*	forest kingfisher		C		1
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		7
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		15
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		36
animals	birds	Jacanidae	*Irediparra gallinacea*	comb-crested jacana		C		2
animals	birds	Laridae	*Thalasseus bergii*	crested tern		SL		11
animals	birds	Laridae	*Hydroprogne caspia*	Caspian tern		SL		27
animals	birds	Laridae	*Chroicocephalus novaehollandiae*	silver gull		C		8
animals	birds	Laridae	*Chlidonias leucopterus*	white-winged black tern		SL		1
animals	birds	Laridae	*Gelochelidon nilotica*	gull-billed tern		SL		4
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		13
animals	birds	Maluridae	*Malurus lamberti*	variegated fairy-wren		C		2
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		4
animals	birds	Megaluridae	*Megalurus gramineus*	little grassbird		C		1
animals	birds	Megaluridae	*Megalurus timoriensis*	tawny grassbird		C		17
animals	birds	Megapodiidae	*Alectura lathami*	Australian brush-turkey		C		3
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		21
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		4
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		3
animals	birds	Meliphagidae	*Anthochaera chrysoptera*	little wattlebird		C		1
animals	birds	Meliphagidae	*Gavicalis fasciogularis*	mangrove honeyeater		C		15
animals	birds	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater		C		8
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		9
animals	birds	Meliphagidae	*Nesoptilotis leucotis*	white-eared honeyeater		C		1
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		22
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		6
animals	birds	Meliphagidae	*Caligavis chrysops*	yellow-faced honeyeater		C		8
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		9
animals	birds	Meliphagidae	*Myzomela obscura*	dusky honeyeater		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		C		13
animals	birds	Monarchidae	*Symposiachrus trivirgatus*	spectacled monarch		SL		1
animals	birds	Monarchidae	*Myiagra inquieta*	restless flycatcher		C		1
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		1
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		38
animals	birds	Monarchidae	*Monarcha melanopsis*	black-faced monarch		SL		1
animals	birds	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit		C		21
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		1
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		8
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		12
animals	birds	Orthonychidae	*Orthonyx temminckii*	Australian logrunner		C		1
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		14
animals	birds	Pachycephalidae	*Colluricincla megarhyncha*	little shrike-thrush		C		1
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		15
animals	birds	Pachycephalidae	*Pachycephala pectoralis*	golden whistler		C		1
animals	birds	Pardalotidae	*Pardalotus punctatus*	spotted pardalote		C		2
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		12
animals	birds	Passeridae	*Passer domesticus*	house sparrow	Y			7
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		107
animals	birds	Petroicidae	*Eopsaltria australis*	eastern yellow robin		C		7
animals	birds	Petroicidae	*Tregellasia capito*	pale-yellow robin		C		1
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		43
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		39
animals	birds	Phalacrocoracidae	*Phalacrocorax carbo*	great cormorant		C		4
animals	birds	Phalacrocoracidae	*Phalacrocorax varius*	pied cormorant		C		55
animals	birds	Phasianidae	*Coturnix ypsilophora*	brown quail		C		13
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		2
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		12
animals	birds	Podicipedidae	*Poliocephalus poliocephalus*	hoary-headed grebe		C		1
animals	birds	Podicipedidae	*Podiceps cristatus*	great crested grebe		C		1
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		6
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		11
animals	birds	Psittacidae	*Psephotus haematonotus*	red-rumped parrot		C		5
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		19
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		26
animals	birds	Psittacidae	*Platycercus eximius*	eastern rosella		C		1
animals	birds	Psittacidae	*Alisterus scapularis*	Australian king-parrot		C		7
animals	birds	Psophodidae	*Psophodes olivaceus*	eastern whipbird		C		3
animals	birds	Ptilonorhynchidae	*Sericulus chrysocephalus*	regent bowerbird		C		1
animals	birds	Ptilonorhynchidae	*Ptilonorhynchus violaceus*	satin bowerbird		C		2
animals	birds	Ptilonorhynchidae	*Ailuroedus crassirostris*	green catbird		C		1
animals	birds	Rallidae	*Lewinia pectoralis*	Lewin's rail		C		94
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		24
animals	birds	Rallidae	*Porphyrio melanotus*	purple swamphen		C		26
animals	birds	Rallidae	*Porzana tabuensis*	spotless crake		C		2
animals	birds	Rallidae	*Porzana fluminea*	Australian spotted crake		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Rallidae	*Gallirallus philippensis*	buff-banded rail		C		10
animals	birds	Rallidae	*Porzana pusilla*	Baillon's crake		C		1
animals	birds	Rallidae	*Fulica atra*	Eurasian coot		C		5
animals	birds	Recurvirostridae	*Recurvirostra novaehollandiae*	red-necked avocet		C		17
animals	birds	Recurvirostridae	*Himantopus himantopus*	black-winged stilt		C		120
animals	birds	Rhipiduridae	*Rhipidura rufifrons*	rufous fantail		SL		1
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		33
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		22
animals	birds	Scolopacidae	*Limicola falcinellus*	broad-billed sandpiper		SL		1
animals	birds	Scolopacidae	*Gallinago hardwickii*	Latham's snipe		SL		5
animals	birds	Scolopacidae	*Calidris ruficollis*	red-necked stint		SL		1
animals	birds	Scolopacidae	*Calidris ferruginea*	curlew sandpiper		SL	CE	7
animals	birds	Scolopacidae	*Tringa stagnatilis*	marsh sandpiper		SL		25
animals	birds	Scolopacidae	*Calidris subminuta*	long-toed stint		SL		1
animals	birds	Scolopacidae	*Calidris melanotos*	pectoral sandpiper		SL		1
animals	birds	Scolopacidae	*Calidris acuminata*	sharp-tailed sandpiper		SL		65
animals	birds	Scolopacidae	*Actitis hypoleucos*	common sandpiper		SL		5
animals	birds	Scolopacidae	*Numenius phaeopus*	whimbrel		SL		18
animals	birds	Scolopacidae	*Tringa nebularia*	common greenshank		SL		19
animals	birds	Scolopacidae	*Calidris canutus*	red knot		SL	E	1
animals	birds	Scolopacidae	*Tringa brevipes*	grey-tailed tattler		SL		2
animals	birds	Scolopacidae	*Limosa lapponica baueri*	Western Alaskan bar-tailed godwit		SL	V	3
animals	birds	Scolopacidae	*Numenius madagascariensis*	eastern curlew		V	CE	2
animals	birds	Sturnidae	*Sturnus vulgaris*	common starling	Y			29
animals	birds	Sturnidae	*Acridotheres tristis*	common myna	Y			15
animals	birds	Threskiornithidae	*Platalea flavipes*	yellow-billed spoonbill		C		4
animals	birds	Threskiornithidae	*Platalea regia*	royal spoonbill		C		54
animals	birds	Threskiornithidae	*Plegadis falcinellus*	glossy ibis		SL		7
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		54
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		123
animals	birds	Timaliidae	*Zosterops lateralis*	silvereye		C		14
animals	birds	Turnicidae	*Turnix velox*	little button-quail		C		2
animals	birds	Tytonidae	*Tyto longimembris*	eastern grass owl		C		4
animals	birds	Tytonidae	*Tyto delicatula*	eastern barn owl		C		1
animals	insects	Nymphalidae	*Danaus plexippus plexippus*	monarch				2
animals	insects	Nymphalidae	*Vanessa kershawi*	Australian painted lady				1
animals	mammals	Canidae	*Vulpes vulpes*	red fox	Y			2
animals	mammals	Molossidae	*Tadarida australis*	white-striped freetail bat		C		1
animals	mammals	Muridae	*Melomys burtoni*	grassland melomys		C		1
animals	mammals	Muridae	*Rattus fuscipes*	bush rat		C		1
animals	mammals	Peramelidae	*Isoodon macrourus*	northern brown bandicoot		C		3
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		V	V	1
animals	mammals	Pteropodidae	*Pteropus alecto*	black flying-fox		C		3
animals	mammals	Pteropodidae	*Pteropus poliocephalus*	grey-headed flying-fox		C	V	1
animals	mammals	Suidae	*Sus scrofa*	pig	Y			1
animals	reptiles	Agamidae	*Intellagama lesueurii*	eastern water dragon		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	reptiles	Agamidae	*Pogona barbata*	bearded dragon		C		1
animals	reptiles	Boidae	*Morelia spilota*	carpet python		C		11
animals	reptiles	Colubridae	*Dendrelaphis punctulatus*	green tree snake		C		2
animals	reptiles	Colubridae	*Tropidonophis mairii*	freshwater snake		C		1
animals	reptiles	Elapidae	*Pseudonaja textilis*	eastern brown snake		C		1
animals	reptiles	Elapidae	*Pseudechis porphyriacus*	red-bellied black snake		C		2
animals	reptiles	Elapidae	*Demansia psammophis*	yellow-faced whipsnake		C		1
animals	reptiles	Elapidae	*Cacophis harriettae*	white-crowned snake		C		1
animals	reptiles	Elapidae	*Hemiaspis signata*	black-bellied swamp snake		C		2
animals	reptiles	Scincidae	*Ctenotus spaldingi*	straight-browed ctenotus		C		1
animals	reptiles	Scincidae	*Tiliqua scincoides*	eastern blue-tongued lizard		C		6
animals	reptiles	Scincidae	*Lampropholis delicata*	dark-flecked garden sunskink		C		4
animals	reptiles	Scincidae	*Calyptotis scutirostrum*	scute-snouted calyptotis		C		1
animals	reptiles	Typhlopidae	*Anilios proximus*	proximus blind snake		C		1
plants	higher dicots	Apocynaceae	*Araujia sericifera*	white moth vine	Y			1/1
plants	higher dicots	Combretaceae	*Terminalia sericocarpa*	damson		C		1
plants	higher dicots	Fabaceae	*Indigofera spicata*	creeping indigo	Y			1/1
plants	higher dicots	Fabaceae	*Kummerowia striata*	japanese clover	Y			1/1
plants	higher dicots	Loranthaceae	*Amylotheca dictyophleba*			C		1/1
plants	higher dicots	Nyctaginaceae	*Boerhavia schomburgkiana*			C		1/1
plants	higher dicots	Onagraceae	*Ludwigia peploides subsp. montevidensis*			C		1/1
plants	higher dicots	Onagraceae	*Oenothera drummondii subsp. drummondii*		Y			1/1
plants	higher dicots	Rosaceae	*Rosa bracteata*	Macartney rose	Y			1/1
plants	monocots	Cyperaceae	*Fimbristylis polytrichoides*			C		1/1
plants	monocots	Cyperaceae	*Fimbristylis ferruginea*			C		1/1
plants	monocots	Poaceae	*Digitaria abyssinica*		Y			1/1
plants	monocots	Poaceae	*Panicum paludosum*	swamp panic		C		1/1
protists	green algae	Chlorophyceae	*Enteromorpha intestinalis*			C		1/1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.* The codes are Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ( ).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.* The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Appendix D
Acid sulfate soils investigations

5 December 2016

ACID SULFATE SOIL ASSESSMENT

Auto Mall Precinct Stage 1

Submitted to:
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PO Box 61
Hamilton Central Q 4007

REPORT

Report Number. 1538021-014-R-Rev1

Distribution:

1 Electronic Copy - BAC

Golder Associates

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1.0 INTRODUCTION

Brisbane Airport Corporation Pty Ltd (BAC) commissioned Golder Associates Pty Ltd (Golder) to undertake an Acid Sulfate Soil (ASS) assessment for Stage 1 of the Auto Mall Precinct project at the Brisbane Airport (see Figure 1). Golder has previously conducted a desktop study contamination and acid sulfate soil review of the Auto Mall Precinct for BAC (reference 1460490-002-R-Rev0, February 2015). The purpose of the current assessment is to inform the detailed design of the proposed development.

The ASS investigation was undertaken during December 2015 as part of a combined geotechnical, contamination and ASS investigation and is based on the scope of work defined in our proposal (Golder document reference no. P1538021-002-L-Rev1 dated 12 October 2015). A supplementary investigation was completed in October 2016 at an additional 3 locations in the central portion of Stage 1 where dense vegetation had prevented access during the December 2015 investigation.

This updated report presents the ASS assessment findings of the original and supplementary investigations at Stage 1 of the Auto Mall Precinct. The assessment results from the geotechnical and contamination investigations are provided in a separate reports.

2.0 PROJECT DETAILS

An Auto Mall Precinct is proposed to be developed on an area between Moreton Drive, Nancy Bird Way and Airport Drive at the Brisbane Airport. Refer attached Figure 1 for the location plan. The proposed development comprises a test track in the middle of the site, surrounded by development lots for future commercial use. Private roads are located around the perimeter of the site. An Energex substation and easement is present on the site.

At the time of issuing this report, we understand that the site is to be developed in three stages as follows:

- Development Stage 1: Track, roads and selected development lots; lots north of the Energex easement between the track and Moreton Drive, and the Track and Nancy Bird Way.
- Development Stage 2: development lots south of the Energex easement.
- Development Stage 3: development lots north of the Energex easement between the track and Airport Drive.

The current staging plan is provided in Appendix A.

It is expected that the majority of the site will be filled and surcharged to achieve final development design levels. Drainage channels will run along site perimeter, with invert levels as low as of RL 0.2 m AD in the western portion of the site. Site drainage channels will discharge into nearby surface water drains.

However, for consistency with previous works, <u>we refer to the portion of the site north of the Energex easement as Stage 1, and the portion to the south as Stage 2</u>.

3.0 SITE DESCRIPTION

The site has an average surface level of about 2.4 m AD[1] and is currently heavily vegetated with casuarina forest and mangroves. The Stage 1 investigation area covers approximately 950 m by 450 m.

Landers Pocket drain is the closet surface water body feature, located at least 100 m west of the project area. Surface water in Landers Pocket drain flows north east for 1 km from the site before discharging into Kedron Brook Floodway Drain. The Kedron Brook Floodway Drain discharges into Kedron Brook. The ultimate receiving environment of surface water is Moreton Bay from Kedron Brook.

[1] Aerodrome Datum

4.0 BACKGROUND INFORMATION

4.1 About Acid Sulfate Soils

Pyritic soils or ASS, were deposited in coastal zones throughout the world during the last 6,500 to 10,000 years. When drained for development or otherwise disturbed, the iron pyrite in these sediments oxidises producing sulfuric acid which subsequently lowers the pH in runoff and groundwater, leading to the release of toxic aluminium and iron from the sediments.

The formation of ASS is commonly the result of marine or estuarine deposition of sulfate and iron bearing sediments in the presence of an abundant source of readily decomposable organic matter resulting in the deposition of pyrite. This pyrite is stable within the soil so long as anoxic conditions prevail. Oxidation of this material produces acidic conditions, a process that typically occurs when the material is exposed to air, such as when raised above the water table by excavation, or by lowering the water table during dewatering processes. This can occur as a result of natural processes, for example as a result of fluctuations in the seawater level.

Acidic water introduced into coastal streams can cause fish kills, alterations to ecosystems and corrosion of civil structures. The source of the acid is naturally occurring pyrite. Environmental degradation occurs when this pyrite oxidises and sulfuric acid is produced and discharged into receiving waters. If receiving water in ASS areas is naturally saline, low level acidity naturally generated is often adequately buffered by the salinity and sometimes by the presence of alkaline calcareous materials present within the alluvial deposits.

Previous experience and available guidelines indicate that ASS are normally restricted in extent to recent (Holocene age) soil horizons deposited in a saline environment below RL 5 m AHD, with Actual ASS (AASS) often occurring at the top of the soil profile, being underlain by Potential ASS (PASS). ASS commonly occurs throughout lowland coastal areas of Australia.

4.2 Previous Investigations

Golder previously conducted a desktop assessment of ASS, groundwater and contamination for the Auto Mall Precinct in 2014. The findings of this desktop assessment were reported in Golder report reference No. 1416490-002-Rev0 and indicated the following:

- Sub-surface conditions typically comprise:

  Crust – A clay 'crust' layer up to 1.0 m bgl is present in some areas due to desiccation.

  Younger Alluvium (Holocene) – Highly compressible, inter-bedded sandy clays and clayey sands (Upper Holocene) and silty clays (Lower Holocene) extending to depths up to 30 m below ground level in places.

- Shallow surface fill may be present on the edges of the site with depths ranging from 0.15m to 1.1m. The fill was a mix of silts and sandy clays with some sands. The underlying natural profiles (upper Holocene alluvium) comprised variable light, medium and heavy clays and clayey sands, with some thin layers of peat and 'clean' sands. The natural soils were generally grey to dark grey and dark brown, indicative of ASS.
- Field screening and laboratory analysis of site soils indicated the presence of actual acid sulfate soils (AASS) typically from the surface to depth of about 0.6m to 1.1 m AD underlain by potential acid sulfate soils (PASS) to depths of more than 1.2 m AD (the limit of previous ASS investigations).
- The acid neutralising capacity (ANC) of the alluvium is generally not adequate to naturally buffer the actual and potential acidity produced.
- Net acidity in the AASS materials ranged from 0.08 S% to about 1.94 S%. Net acidity in the PASS materials ranged from 0.06 S% to about 2.55 S%.

To assist in the current assessment of ASS soil conditions, previous investigation results have been included in this current assessment. In particular previous ASS results for investigation locations BIP/ASS6, BIP/ASS8, BIP/ASS9 and BIP/ASS10 (Golder report reference No. 097632009-2001-R-Rev0 Brisbane International Precinct Stage A, Acid Sulfate Soil Investigation, dated April 2009). Figure 1 displays the previous ASS investigation locations.

4.3 Geology

Reference to the Geological Survey of Queensland 1:100,000 scale Brisbane Geological map (1990) indicates that all of the assessment site is located on alluvial deposits of Holocene age.

Holocene deposits are typically associated with ASS formation.

4.4 Hydrogeology

Previous investigations in this area have encountered groundwater levels ranging from about 1.6m AD to 2.5m AD with a general direction of groundwater flow has been inferred as west towards Landers Pocket Drain.

4.5 Soil Landscape

The "Soil Landscapes of Brisbane and South-Eastern Environs, Queensland", CSIRO 1:100,000 scale Map Sheet (1985) indicates that the assessment site is situated within an alluvial landscape likely to comprise the following soil group:

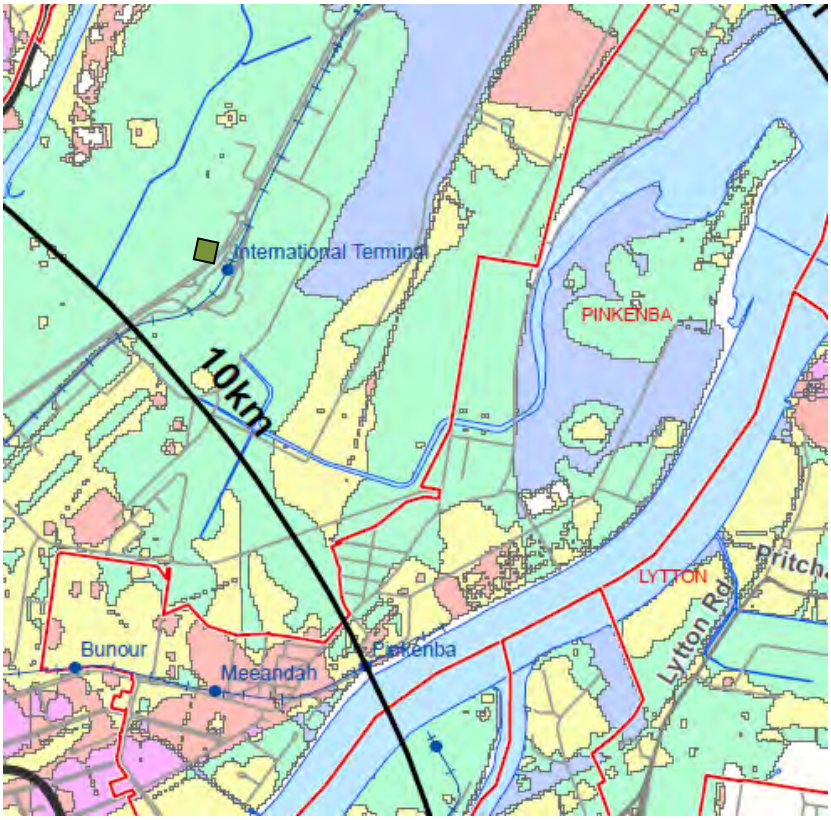
Woongoolba- WO

- Dominant Soil Group – 'Humic gleys, peaty gleys' and 'solonchaks'
- Landscape and Parent Geology – Low (coastal) plains of alluvium and narrow depressions.

This soil profile is a young alluvium that frequently contains moderate to high concentrations of pyritic material and fine organic matter. This soil unit is generally associated with ASS.

4.6 ASS Risk Maps

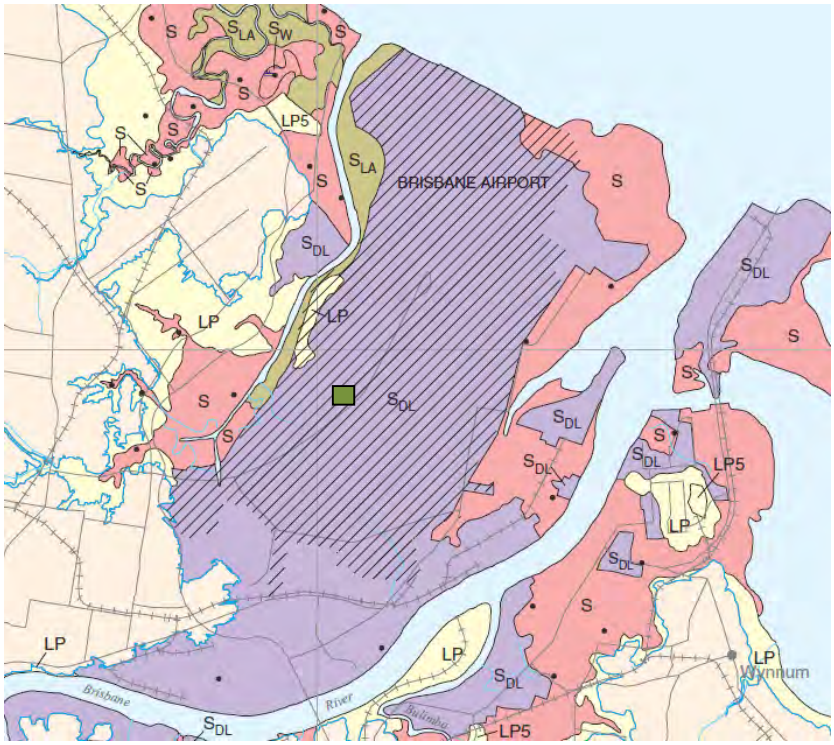
The Brisbane City Council "A Guide to the Likely Location of Acid Sulfate Soils in Brisbane" 1:50,000 scale risk map, indicates that the site is situated in an area mapped as having a 'Very High' risk of encountering ASS (refer below). The 'Very High' risk ASS soils at the site are likely to be associated with the recent alluvial soils.



ACID SULPHATE SOILS
HAZARD_RATING
- Extremely High
- Very High
- High
- Medium
- Low

Approximate location of site

Brisbane City Council ASS Hazard Risk Map for the Site



Approximate location of site

DNRM Acid Sulfate Soils Map for the Site

The Department of Natural Resources Mines (DNRM), 1:100,000 scale Map 1 "Acid Sulfate Soils –Tweed Heads to Redcliffe" (refer above), indicates that the site is situated in an area mapped as:

- SDL – Disturbed land (e.g. canal estates, marinas, aquaculture, quarry, urban, and industrial likely to contain ASS. (In some cases, partial or full treatment may have been undertaken). Limited field investigation.

5.0 REGULATORY FRAMEWORK

The following key regulatory drivers and guidance documents have been considered and utilised in conducting this assessment:

- *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland – 1998.* QASSIT
- *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines*. 2014. Department of Science, Information Technology, Innovation and the Arts, Queensland Government.

6.0 FIELDWORK

6.1 Soil Investigation

Details of the soil investigation methodology for the ASS investigation is summarised in Table 1 below.

Table 1: Field Activities - Drilling and Soil Sampling

Activity	Details
Drilling	Soil sampling for the original acid sulfate soil assessment was conducted from 16 to 18 December 2015 which included 12 boreholes identified as AM-BH1 to AM-BH9, AM-BH17, AM-BH19 and AM-BH28. The supplementary investigation was conducted on 10 October 2016 and comprised 3 boreholes identified at AM-BH30, AM-BH31 and AM-BH32. The boreholes were advanced to depths of 3m using hollow stem augers mounted on a light tracked vehicle. Soil samples were collected using an SPT spilt tube. The sampling was conducted in conjunction with contamination and geotechnical investigations for the site. Borehole drilling was carried out under the supervision of a geotechnical engineer from Golder. Soil descriptions for the lithology encountered during drilling are presented as borehole logs in Appendix B.
Borehole Survey	Upon completion of intrusive investigations selected locations were surveyed by MPA Surveyors using differential GPS for easting, northing and RL. Remaining locations and levels were inferred from the survey plan provided by BAC (received 24 November 2015).
Soil Sampling	Soil samples were collected at 0.25 m intervals from the surface to 3m below ground level (bgl) for ASS testing.
Samples Preservation and Handling	All ASS samples were labelled and sealed in plastic bags and refrigerated, then frozen within 24 hours, until laboratory testing was undertaken. All samples collected were sent to Australian Laboratory Services (ALS) of Brisbane under Chain of Custody (CoC) procedure (documents in Appendix C).
Soil Screening	All soil samples were screened using the pH_F/pH_{FOX} test method.
Soil Analysis	Soil samples were selected on the basis of the screening test results for quantitative laboratory analyses by the Chromium Suite test method (laboratory documents in Appendix C).

6.2 Groundwater Investigation

Details of groundwater investigation methodology are summarised in Table 2 below.

Table 2: Field Activities - Groundwater Well Installation and Sampling

Activity	Details
Monitoring Well Installation and Construction	Five boreholes (AM-BH01, AM-BH04, AM-BH08, AM-BH19 and AM-BH28) were converted into new groundwater monitoring wells during the original investigation. During the supplementary investigation, one borehole (AM-BH31) was converted into a new groundwater monitoring well. **Figure 1** displays the monitoring well locations installed during this assessment and existing historical monitoring wells (BIP/MW1, BIP/MW2, BIP/MW6, BAC-MW07 and BAC-MW-24). New monitoring wells were constructed using 50 mm, Class 18 PVC threaded screen and casing. Construction details for monitoring wells are presented on borehole reports in Appendix B.
Well Development	Following installation the new wells were developed using dedicated disposable bailers.
Well Gauging	Standing water levels (SWLs) were measured in the original investigation wells and historical wells on 4 January 2016 using a calibrated water level meter. The SWL in the supplementary well was measured on 25 October 2016. Groundwater gauging data are presented in Section 6.2 Table 2.
Well Purging	On 4 January 2016, the wells were using dedicated disposable bailers. On 25 October 2016 purging was completed using a low flow peristaltic pump, equipped with disposable tubing. Groundwater quality parameters and visual observations were recorded during purging. Purging continued until three well volumes were removed or to stabilisation of quality parameters.
Groundwater Sampling	Groundwater samples were collected from all new and existing wells using new disposable bailers on 4 January 2016 and directly from the pump on 25 October 2016.
Sample Preservation and Handling	Collected water samples were placed in laboratory supplied containers. Samples were placed with ice, in eskies whilst on-site and in transit to the laboratory. All samples were sent to Australian Laboratory Services (ALS) of Brisbane under Chain of Custody (CoC) procedures (documents in Appendix C).
Groundwater Analysis	Groundwater samples were analysed for ASS indicator parameters comprising pH, electrical conductivity, chloride, sulfate, alkalinity, acidity, dissolved iron, dissolved aluminium and total iron. Laboratory analytical reports are presented in Appendix C.

7.0 ASSESSMENT CRITERIA

Table 3 below shows the ASS action levels adopted in Queensland. These categories are used to identify whether action / management of ASS disturbances is required, based on 'net acidity' (derived from the results of the Chromium Suite analysis or the Chromium Suite test suites). For this assessment an action criteria of 0.03% Equivalent Sulfur has been adopted.

Table 3: ASS Action Criteria

Type of Material		Action Criteria 1-1000 tonnes disturbed		Action Criteria > 1000 tonnes disturbed (and major fill projects)	
		Existing + Potential Acidity		Existing + Potential Acidity	
Texture range McDonald et al. (1990)	**Approx clay content (%)**	**Equivalent sulfur %S oxidisable**	**Equivalent acid mol H^+/ tonne**	**Equivalent sulfur %S oxidisable (oven-dry basis)**	**Equivalent acid mol H^+/ tonne (oven-dry basis)**
Coarse Texture Sands to loamy sands	≤5	0.03	18	0.03	18*
Medium Texture Sandy loams to light clays	5 – 40	0.06	36	0.03	18*
Fine Texture Medium to heavy clays and silty clays	≥40	0.10	62	0.03	18*

Table 4 below (*Treatment and management of soils and water in acid sulfate soil landscapes*, July 2011, revised 2015, WA DEC) provides a guide for the assessment of the buffering capacity of groundwater.

Table 4: General Indicators for Buffering Capacity

Class	Designation	Alkalinity		pH	Description
		mg/L	meq./L		
1	Very high alkalinity	>180	>3	>6.5	Adequate to maintain acceptable pH level in the future.
2	High alkalinity	60-80	1-3	>6.0	Adequate to maintain acceptable pH level in the future.
3	Moderate alkalinity	30-60	0.5-1.0	5.5-7.5	Inadequate to maintain stable, acceptable pH level in areas vulnerable to acidification.
4	Low alkalinity	10-30	0.2-0.5	5.0-6.0	Inadequate to maintain stable, acceptable pH level.
5	Very low alkalinity	<10	<0.2	<6.0	Unacceptable pH level under all circumstances.

8.0 INVESTIGATION FINDINGS

8.1 Subsurface Conditions

Detailed information of subsurface conditions encountered at the site are described in Report of Boreholes (Appendix B).

A summary of typical subsurface conditions encountered is as follows:

- **Crust** – A desiccated layer generally comprising loose silty sand and sandy clay generally between 0.1 to 0.3 m bgl, over
- **Recent Alluvium (Holocene)** – Compressible, inter-bedded sandy clays and clayey sands (Upper Holocene) from approximately 0 to 3 m bgl (target depth).

8.2 Groundwater Levels

Table 5 summarises the groundwater measurements for the current investigation. It should be noted that BAC has not provided Golder with construction details for wells BAC-MW07 and BAC-MW24 at the time of this report. Based on the measured groundwater levels, the general flow direction beneath the site is interpreted to be west.

Table 5: Summary of Groundwater Level Observations

Well ID	Depth to Groundwater (m bgl)	Groundwater RL (m AD)	Date and Time of Observations
AM-BH01	0.93	2.06	04/01/2016 AT 12:00 PM
AM-BH04	1.41	1.26	04/01/2015 AT 12.36 PM
AM-BH08	1.13	1.75	04/01/2016 AT 12:50 PM
AM-BH19	0.71	1.91	04/01/2016 AT 1:05 PM
AM-BH28	0.76	1.98	04/01/2016 AT 12:20 PM
BIP/MW1	1.27	1.53	04/01/2016 AT 12.36 PM
BIP/MW2	1.07	1.91	04/01/2016 AT 11:00 AM
BP/MW6	1.02	2.01	04/01/2016 AT 11:30 AM
BAC-MW07	1.24	1.66	04/01/2016 AT 1:32 PM
BAC-MW24	0.81	2.13	04/01/2016 AT 10:30 AM
AM-MW31	0.95	1.8	25/10/2016 AT 12:30 PM

8.3 ASS Screening Tests

The pH_F/pH_{FOX} screening method consists of two steps; determining the field pH of a 1:5 soil/water suspension, and by the addition of 30% Hydrogen Peroxide, allowing the sample time to oxidise, before determining the pH_{FOX} (pH after oxidation) of the reacted sample. A significant drop in pH is indicative of potential acidity and a low initial pH, indicative of actual acidity.

The tests are used to indicate the likelihood of a soil containing actual acidity (i.e. Actual ASS [AASS]) and/or potential acidity (i.e. Potential ASS [PASS]).

The following rating is used in the assessment of samples in the attached table:

1) AASS potential is indicated by; Nil ($pH_F > 4.5$), Medium (pH_F 4.5< $pH_F \leq 4$), High ($pH_F < 4$)

2) PASS potential is indicated by: Low ($pH_{FOX} > 3$), Medium ($pH_{FOX} > 3$ and difference between pH_{FOX} and pHFOX is greater than 3, High (pHFOX < 3).

3) Where the pHFOX value is significantly less than the reported pHF, this may indicate the presence of PASS, with larger reductions in pHFOX generally providing a stronger indication of potential PASS.

The rate of reaction is also an indicator of likely PASS.

Field screening test results on recovered soil samples during the investigation are presented in Appendix C and summarised in Table 6 below.
The screening test results from the current investigations indicated the following:

- The pH_F values materials ranged between 3.8 and 8.5. The likely presence of AASS was indicated at all investigation locations with the expection of AM-BH09. Field tests generally indicated the presence of AASS from the surface levels between about 0.8m AD and 1.2m AD (ie. extending below the measured water table). At location AM-BH19 the presence of AASS was indicated from the surface to the full depth of investigation.
- The pH_{FOX} values suggest a high potential for PASS underlying the AASS to a level of at least -0.54 m AD, the maximum investigation depth.

Table 6: Acid Sulfate Soil Screening Test Results (continued)

Location ID	Sample Depth Range (m bgl)			Sample Depth Range (m AD)			Soil Type	pH (F) pH Unit	AASS Likelihood[1]	pH (Field ox) pH_Units	Reaction Rate [2]	PASS Likelihood[3]
AM-BH01	0	-	0.25	2.99	-	2.74	Silty SAND	4.5	Medium	2.4	3	High
AM-BH01	0.25	-	0.5	2.74	-	2.49	Sandy CLAY	4.2	Medium	2.4	2	High
AM-BH01	0.5	-	0.75	2.49	-	2.24	Sandy CLAY/CLAY	4.2	Medium	2.4	2	High
AM-BH01	0.75	-	1	2.24	-	1.99	CLAY	4	High	2.4	2	High
AM-BH01	1	-	1.25	1.99	-	1.74	CLAY	4	High	2.4	2	High
AM-BH01	1.25	-	1.5	1.74	-	1.49	Clayey SAND	4	High	2.2	2	High
AM-BH01	1.5	-	1.75	1.49	-	1.24	Clayey SAND	4.2	Medium	2.3	2	High
AM-BH01	1.75	-	2	1.24	-	0.99	Clayey SAND	4.7	Nil	2.6	2	High
AM-BH01	2	-	2.25	0.99	-	0.74	SAND	6.2	Nil	1.9	2	High
AM-BH01	2.25	-	2.5	0.74	-	0.49	SAND	6.6	Nil	1.9	3	High
AM-BH01	2.5	-	2.75	0.49	-	0.24	SAND	6.8	Nil	1.8	3	High
AM-BH01	2.75	-	3	0.24	-	-0.01	SAND	6.9	Nil	2.2	4	High
AM-BH02	0	-	0.25	2.5	-	2.25	Silty SAND	5.2	Nil	2.9	3	High
AM-BH02	0.5	-	0.75	2	-	1.75	Sandy CLAY	4.6	Nil	2.7	3	High
AM-BH02	0.75	-	1	1.75	-	1.5	Sandy CLAY	4.6	Nil	2.4	3	High
AM-BH02	1	-	1.25	1.5	-	1.25	Sandy CLAY/CLAY	5.7	Nil	2.9	3	High
AM-BH02	1.25	-	1.5	1.25	-	1	CLAY	6	Nil	3.8	3	High
AM-BH02	1.5	-	1.75	1	-	0.75	CLAY	6.5	Nil	2.1	3	High
AM-BH02	1.75	-	2	0.75	-	0.5	CLAY/Sandy CLAY	6.8	Nil	2	4	High
AM-BH02	2	-	2.25	0.5	-	0.25	Sandy CLAY/SAND	6.6	Nil	2.1	4	High
AM-BH02	2.25	-	2.5	0.25	-	0	SAND	6.6	Nil	2.1	4	High
AM-BH02	2.5	-	2.75	0	-	-0.25	SAND	6.6	Nil	1.9	3	High
AM-BH03	0	-	0.25	2.92	-	2.67	Silty SAND	5.3	Nil	2.9	3	High
AM-BH03	0.25	-	0.5	2.67	-	2.42	Sandy CLAY	4.3	Medium	2.3	3	High
AM-BH03	0.5	-	0.75	2.42	-	2.17	CLAY	4.2	Medium	1.9	3	High
AM-BH03	0.75	-	1	2.17	-	1.92	CLAY	4.2	Medium	2.3	2	High
AM-BH03	1	-	1.25	1.92	-	1.67	Sandy CLAY	4.4	Medium	2.4	2	High
AM-BH03	1.25	-	1.5	1.67	-	1.42	Sandy CLAY	4.3	Medium	2.4	2	High
AM-BH03	1.5	-	1.75	1.42	-	1.17	SAND	4.6	Nil	2.7	2	High
AM-BH03	1.75	-	2	1.17	-	0.92	SAND	5.8	Nil	2.7	3	High
AM-BH03	2	-	2.25	0.92	-	0.67	SAND	6	Nil	1.8	3	High
AM-BH03	2.25	-	2.5	0.67	-	0.42	SAND	6.3	Nil	2.1	4	High
AM-BH03	2.5	-	2.75	0.42	-	0.17	SAND	6.4	Nil	2.2	4	High
AM-BH03	2.75	-	3	0.17	-	-0.08	SAND	6.5	Nil	2.2	4	High
AM-BH04	0	-	0.25	2.67	-	2.42	Silty SAND	4.2	Medium	1.9	3	High
AM-BH04	0.25	-	0.5	2.42	-	2.17	CLAY	4	High	2	3	High
AM-BH04	0.5	-	0.75	2.17	-	1.92	CLAY	3.9	High	2	3	High
AM-BH04	0.75	-	1	1.92	-	1.67	Sandy CLAY	4	High	2.1	2	High
AM-BH04	1	-	1.25	1.67	-	1.42	Sandy CLAY	4	High	2.3	2	High
AM-BH04	1.25	-	1.5	1.42	-	1.17	SAND	4.1	Medium	2.3	2	High
AM-BH04	1.5	-	1.75	1.17	-	0.92	SAND	4.2	Medium	2.1	2	High
AM-BH04	1.75	-	2	0.92	-	0.67	SAND	6.1	Nil	2.4	4	High
AM-BH04	2	-	2.25	0.67	-	0.42	SAND	6.1	Nil	2.3	4	High
AM-BH04	2.25	-	2.5	0.42	-	0.17	SAND	6.2	Nil	2.5	4	High
AM-BH04	2.5	-	2.75	0.17	-	-0.08	SAND	6.7	Nil	2.5	4	High
AM-BH04	2.75	-	3	-0.08	-	-0.33	SAND	7	Nil	2.2	4	High

1) AASS likelihood is indicated by; Nil ($pH_F > 4.5$), Medium (pH_F 4.5< $pH_F \leq 4$), High ($pH_F < 4$)

2) PASS likelihood is indicated by: Low ($pH_{FOX} > 3$), Medium ($pH_{FOX} > 3$ and difference between pH_{FOX} and pH_{FOX} is greater than 3, High ($pH_{FOX} < 3$).

3) Reaction 1 = Low strength, 2 = Medium strength, 3 = High strength, 4 = Extreme

Table 6: Acid Sulfate Soil Screening Test Results (continued)

Location ID	Sample Depth Range (m bgl)			Sample Depth Range (m AD)			Soil Type	pH (F) pH Unit	AASS Likelihood[1]	pH (Field ox) pH_Units	Reaction Rate [2]	PASS Likelihood[3]
AM-BH05	0	-	0.25	2.5	-	2.25	Silty SAND	4.7	Nil	2.6	3	High
AM-BH05	0.25	-	0.5	2.25	-	2	CLAY	5.8	Nil	3.4	2	High
AM-BH05	0.5	-	0.75	2	-	1.75	CLAY	4.9	Nil	2.9	2	High
AM-BH05	0.75	-	1	1.75	-	1.5	CLAY	4.1	Medium	2.4	2	High
AM-BH05	1	-	1.25	1.5	-	1.25	CLAY	3.9	High	2.4	2	High
AM-BH05	1.25	-	1.5	1.25	-	1	SAND	4	High	2.3	2	High
AM-BH05	1.5	-	1.75	1	-	0.75	SAND	4.4	Medium	3	2	High
AM-BH05	1.75	-	2	0.75	-	0.5	SAND	5.3	Nil	2.6	2	High
AM-BH05	2	-	2.25	0.5	-	0.25	SAND	5.2	Nil	2.4	2	High
AM-BH05	2.25	-	2.5	0.25	-	0	SAND	5.8	Nil	1.9	3	High
AM-BH05	2.5	-	2.75	0	-	-0.25	SAND	6.3	Nil	2	4	High
AM-BH05	2.75	-	3	-0.25	-	-0.5	SAND	6.6	Nil	2.2	4	High
AM-BH06	0	-	0.25	2.5	-	2.25	Silty SAND	4.8	Medium	2.4	4	High
AM-BH06	0.25	-	0.5	2.25	-	2	Sandy CLAY	4.3	Medium	2.4	3	High
AM-BH06	0.5	-	0.75	2	-	1.75	Sandy CLAY	4.3	Medium	2.4	2	High
AM-BH06	0.75	-	1	1.75	-	1.5	CLAY	4.3	Medium	2.2	2	High
AM-BH06	1	-	1.25	1.5	-	1.25	Sandy CLAY	4.2	Medium	2.3	2	High
AM-BH06	1.25	-	1.5	1.25	-	1	CLAY	4.1	Medium	2.4	2	High
AM-BH06	1.5	-	1.75	1	-	0.75	CLAY/Sandy CLAY	4.7	Nil	2.6	2	High
AM-BH06	1.75	-	2	0.75	-	0.5	Sandy CLAY	5.5	Nil	2.6	2	High
AM-BH06	2	-	2.25	0.5	-	0.25	Sandy CLAY	6.1	Nil	1.7	4	High
AM-BH06	2.25	-	2.5	0.25	-	0	Sandy CLAY	6.2	Nil	1.6	4	High
AM-BH06	2.5	-	2.75	0	-	-0.25	Sandy CLAY	6.8	Nil	1.9	4	High
AM-BH06	2.75	-	3	-0.25	-	-0.5	Sandy CLAY	7	Nil	2	4	High
AM-BH07	0	-	0.25	3.2	-	2.95	Fill: Silty SAND	6.4	Nil	3.2	3	Medium
AM-BH07	0.5	-	0.75	2.7	-	2.45	Fill: Sandy CLAY/ Clayey COBBLES	4.2	Medium	2.2	3	High
AM-BH07	0.75	-	1	2.45	-	2.2	Sandy CLAY	3.9	High	2	3	High
AM-BH07	1	-	1.25	2.2	-	1.95	CLAY	4.6	Nil	3	2	High
AM-BH07	1.25	-	1.5	1.95	-	1.7	Sandy CLAY	4.6	Nil	2.6	2	High
AM-BH07	1.5	-	1.75	1.7	-	1.45	Sandy CLAY	5.9	Nil	2.9	2	High
AM-BH07	1.75	-	2	1.45	-	1.2	Clayey SAND	6.2	Nil	2.3	3	High
AM-BH07	2	-	2.25	1.2	-	0.95	Clayey SAND	6.3	Nil	1.4	4	High
AM-BH07	2.25	-	2.5	0.95	-	0.7	Clayey SAND	6.8	Nil	1.8	4	High
AM-BH07	2.5	-	2.75	0.7	-	0.45	Clayey SAND	7	Nil	1.8	4	High
AM-BH07	2.75	-	3	0.45	-	0.2	Clayey SAND	7.2	Nil	1.9	4	High

1) AASS likelihood is indicated by; Nil ($pH_F > 4.5$), Medium (pH_F 4.5< $pH_F \leq 4$), High ($pH_F < 4$)

2) PASS likelihood is indicated by: Low ($pH_{FOX} > 3$), Medium ($pH_{FOX} > 3$ and difference between pH_{FOX} and pH_{FOX} is greater than 3, High ($pH_{FOX} < 3$).

3) Reaction 1 = Low strength, 2 = Medium strength, 3 = High strength, 4 = Extreme

Table 6: Acid Sulfate Soil Screening Test Results (continued)

Location ID	Sample Depth Range (m bgl)			Sample Depth Range (m AD)			Soil Type	pH (F) pH Unit	AASS Likelihood[1]	pH (Field ox) pH_Units	Reaction Rate [2]	PASS Likelihood[3]
AM-BH08	0	-	0.25	2.88	-	2.63	silty SAND	7	Nil	5.5	2	Low
AM-BH08	0.25	-	0.5	2.63	-	2.38	Silty SAND/Sandy CLAY	5.9	Nil	3.2	3	Low
AM-BH08	0.5	-	0.75	2.38	-	2.13	Sandy CLAY	4.3	Medium	2.3	2	High
AM-BH08	0.75	-	1	2.13	-	1.88	CLAY	3.9	High	2.1	2	High
AM-BH08	1	-	1.25	1.88	-	1.63	CLAY	4.2	Medium	2.4	2	High
AM-BH08	1.25	-	1.5	1.63	-	1.38	CLAY	5.2	Nil	2.6	3	High
AM-BH08	1.5	-	1.75	1.38	-	1.13	CLAY	4.9	Nil	2.5	2	High
AM-BH08	1.75	-	2	1.13	-	0.88	Sandy CLAY	6.2	Nil	1.4	4	High
AM-BH08	2	-	2.25	0.88	-	0.63	Sandy CLAY	6.5	Nil	1.8	4	High
AM-BH08	2.25	-	2.5	0.63	-	0.38	Sandy CLAY	6.9	Nil	1.8	4	High
AM-BH08	2.5	-	2.75	0.38	-	0.13	Sandy CLAY	7.6	Nil	1.6	4	High
AM-BH08	2.75	-	3	0.13	-	-0.12	CLAY	7	Nil	1.5	4	High
AM-BH09	0	-	0.25	3.3	-	3.05	Fill: Silty SAND	7.3	Nil	4.1	3	Medium
AM-BH09	0.25	-	0.5	3.05	-	2.8	Fill: Clayey COBBLES	7.4	Nil	5.3	3	Low
AM-BH09	0.5	-	0.75	2.8	-	2.55	Fill: Clayey COBBLES	4.6	Nil	3.2	2	Low
AM-BH09	0.75	-	1	2.55	-	2.3	Sandy CLAY	3.8	High	2.1	2	High
AM-BH09	1	-	1.25	2.3	-	2.05	Sandy CLAY	5.5	Nil	3.1	4	Medium
AM-BH09	1.25	-	1.5	2.05	-	1.8	CLAY	4.8	Nil	2.8	4	Medium
AM-BH09	1.5	-	1.75	1.8	-	1.55	CLAY	4.5	Medium	2.9	4	Medium
AM-BH09	1.75	-	2	1.55	-	1.3	Clayey SAND	4.3	Medium	2.4	3	Medium
AM-BH09	2	-	2.25	1.3	-	1.05	Clayey SAND	4.2	Medium	2.4	3	Medium
AM-BH09	2.25	-	2.5	1.05	-	0.8	Clayey SAND	4.3	Medium	2.5	3	Medium
AM-BH09	2.5	-	2.75	0.8	-	0.55	SAND	5.3	Nil	3	3	Medium
AM-BH09	2.75	-	3	0.55	-	0.3	SAND	4.8	Medium	3	2	Low
AM-BH17	0	-	0.25	2.46	-	2.21	Sandy CLAY	6.1	Nil	3.8	3	Low
AM-BH17	0.25	-	0.5	2.21	-	1.96	Sandy CLAY	5.8	Nil	3.4	2	Low
AM-BH17	0.5	-	0.75	1.96	-	1.71	Sandy CLAY	7.9	Nil	6	3	Low
AM-BH17	0.75	-	1	1.71	-	1.46	Sandy CLAY	8	Nil	2.6	4	High
AM-BH17	1	-	1.25	1.46	-	1.21	CLAY	8.1	Nil	4	3	Medium
AM-BH17	1.25	-	1.5	1.21	-	0.96	CLAY	8.5	Nil	1.7	4	High
AM-BH17	1.5	-	1.75	0.96	-	0.71	CLAY	8.3	Nil	2	4	High
AM-BH17	1.75	-	2	0.71	-	0.46	CLAY	8.3	Nil	1.8	4	High
AM-BH17	2	-	2.25	0.46	-	0.21	CLAY	8.3	Nil	1.5	4	High
AM-BH17	2.25	-	2.5	0.21	-	-0.04	CLAY	8.4	Nil	1.6	4	High
AM-BH17	2.5	-	2.75	-0.04	-	-0.29	CLAY	8.4	Nil	1.7	4	High
AM-BH17	2.75	-	3	-0.29	-	-0.54	CLAY	8.5	Nil	1.7	4	High
AM-BH19	0	-	0.25	2.62	-	2.37	Silty SAND/CLAY	7.4	Nil	3.6	3	Medium
AM-BH19	0.25	-	0.5	2.37	-	2.12	CLAY	5	Nil	2.4	3	High
AM-BH19	0.5	-	0.75	2.12	-	1.87	CLAY	4.5	Medium	1.9	3	High
AM-BH19	0.75	-	1	1.87	-	1.62	CLAY	4.4	Medium	2.7	3	High
AM-BH19	1	-	1.25	1.62	-	1.37	CLAY	4.3	Medium	2.5	2	High
AM-BH19	1.25	-	1.5	1.37	-	1.12	SAND	6	Nil	2.5	3	High
AM-BH19	1.5	-	1.75	1.12	-	0.87	SAND	6.3	Nil	2.6	3	High
AM-BH19	1.75	-	2	0.87	-	0.62	SAND	6.4	Nil	3.5	3	Low
AM-BH19	2	-	2.25	0.62	-	0.37	SAND	6.4	Nil	3.7	3	Low
AM-BH19	2.25	-	2.5	0.37	-	0.12	SAND	6.5	Nil	4	3	Low
AM-BH19	2.5	-	2.75	0.12	-	-0.13	SAND	6.2	Nil	2	4	High
AM-BH19	2.75	-	3	-0.13	-	-0.38	SAND	6.1	Nil	2	3	High

1) AASS likelihood is indicated by; Nil ($pH_F > 4.5$), Medium (pH_F 4.5< $pH_F \leq 4$), High ($pH_F < 4$)

2) PASS likelihood is indicated by: Low ($pH_{FOX} > 3$), Medium ($pH_{FOX} > 3$ and difference between pH_{FOX} and pH_{FOX} is greater than 3, High ($pH_{FOX} < 3$).

3) Reaction 1 = Low strength, 2 = Medium strength, 3 = High strength, 4 = Extreme

Table 6: Acid Sulfate Soil Screening Test Results (continued)

Location ID	Sample Depth Range (m bgl)			Sample Depth Range (m AD)			Soil Type	pH (F) pH Unit	AASS Likelihood[1]	pH (Field ox) pH_Units	Reaction Rate [2]	PASS Likelihood[3]
AM-BH28	0	-	0.25	2.74	-	2.49	Silty SAND	4.9	Nil	3	3	High
AM-BH28	0.25	-	0.5	2.49	-	2.24	Sandy CLAY	4.8	Nil	2.8	3	High
AM-BH28	0.5	-	0.75	2.24	-	1.99	CLAY	5.4	Nil	1.7	3	High
AM-BH28	1.5	-	1.75	1.24	-	0.99	CLAY	6.9	Nil	1.5	4	High
AM-BH28	2.5	-	2.75	0.24	-	-0.01	SAND	6.6	Nil	2	4	High
AM-BH28	2.75	-	3	-0.01	-	-0.26	SAND	7.3	Nil	2.1	4	High
AM-BH30	0	-	0.25	2.74	-	2.49	clayey sandy SILT	4.5	Medium	2.8	3	High
AM-BH30	0.25	-	0.5	2.49	-	2.24	clayey sandy SILT	3.9	High	2.2	3	High
AM-BH30	0.5	-	0.75	2.24	-	1.99	CLAY	4.2	Medium	2.5	3	High
AM-BH30	0.75		1	1.99	-	1.74	CLAY	5.4	Nil	3.8	2	Low
AM-BH30	1		1.25	1.74	-	1.49	CLAY	6.4	Nil	4.2	3	Low
AM-BH30	1.25		1.5	1.49	-	1.24	Sandy CLAY	6.8	Nil	4	3	High
AM-BH30	1.5		1.75	1.24	-	0.99	silty CLAY	7.1	Nil	1.8	3	High
AM-BH30	1.75	-	2	0.99	-	0.74	silty CLAY	7.2	Nil	1.8	4	High
AM-BH30	2	-	2.25	0.74	-	0.49	silty CLAY	8	Nil	2.4	4	High
AM-BH30	2.25	-	2.5	0.49	-	0.24	silty CLAY	8.1	Nil	2	4	High
AM-BH30	2.5		2.75	0.24	-	-0.01	clayey SAND	8.2	Nil	2	4	High
AM-BH31	0.25	-	0.5	2.5	-	2.25	silty CLAY	4.2	Medium	2.4	3	High
AM-BH31	0.5	-	0.75	2.25	-	2	CLAY	3.9	High	2.2	2	High
AM-BH31	0.75		1	2	-	1.75	CLAY	5.7	Nil	3.9	3	Low
AM-BH31	1		1.25	1.75	-	1.5	Clayey SAND	5.1	Nil	2.5	3	High
AM-BH31	1.25		1.5	1.5	-	1.25	CLAY	5.8	Nil	1.8	4	High
AM-BH31	1.5		1.75	1.25	-	1	CLAY	6.5	Nil	1.9	4	High
AM-BH31	1.75	-	2	1	-	0.75	CLAY	7	Nil	1.8	4	High
AM-BH31	2	-	2.25	0.75	-	0.5	CLAY	7.1	Nil	1.7	4	High
AM-BH31	2.25	-	2.5	0.5	-	0.25	CLAY	7.4	Nil	1.7	4	High
AM-BH31	2.5		2.75	0.25	-	0	sandy CLAY	7.8	Nil	2	4	High
AM-BH31	2.75		3	0	-	-0.25	clayey SAND	7.8	Nil	1.7	4	High
AM-BH32	0	-	0.25	2.64	-	2.39	clayey sandy SILT	4.4	Medium	2.6	3	High
AM-BH32	0.25	-	0.5	2.39	-	2.14	clayey sandy SILT	4.7	Nil	2.8	3	High
AM-BH32	0.5	-	0.75	2.14	-	1.89	CLAY	4.6	Nil	2.6	3	High
AM-BH32	0.75		1	1.89	-	1.64	CLAY	4.9	Nil	2.2	3	High
AM-BH32	1		1.25	1.64	-	1.39	CLAY	5.2	Nil	1.4	4	High
AM-BH32	1.25		1.5	1.39	-	1.14	Sandy CLAY	5	Nil	1.6	4	High
AM-BH32	1.5		1.75	1.14	-	0.89	silty CLAY	5.9	Nil	1.6	4	High
AM-BH32	1.75	-	2	0.89	-	0.64	silty CLAY	6.6	Nil	1.5	4	High
AM-BH32	2	-	2.25	0.64	-	0.39	silty CLAY	6.6	Nil	1.6	4	High
AM-BH32	2.25	-	2.5	0.39	-	0.14	silty CLAY	6.8	Nil	1.6	4	High
AM-BH32	2.5		2.75	0.14	-	-0.11	silty CLAY	7.1	Nil	1.8	4	High
AM-BH32	2.75		3	-0.11	-	-0.36	Sandy CLAY	7.1	Nil	1.9	4	High

1) AASS likelihood is indicated by; Nil ($pH_F > 4.5$), Medium (pH_F 4.5< $pH_F \leq 4$), High ($pH_F < 4$)

2) PASS likelihood is indicated by: Low ($pH_{FOX} > 3$), Medium ($pH_{FOX} > 3$ and difference between pH_{FOX} and pH_{FOX} is greater than 3, High ($pH_{FOX} < 3$).

3) Reaction 1 = Low strength, 2 = Medium strength, 3 = High strength, 4 = Extreme

8.4 Chromium Suite Analysis

Based on screening test results, a total of 41 soil samples (2 to 3 per borehole) were selected for laboratory analysis by the Chromium Suite test methods. The soil samples were selected to target samples with field screening tests showing high AASS or PASS potential and to provide a broad coverage of the soil profile.

Results of laboratory testing including acid base accounting to calculate net acidity are summarised in Table 7. Table 7 includes previous ASS investigation results for BIP/ASS6, BIP/ASS8, BIP/ASS9 and BIP/ASS10.

Laboratory results indicated:

- The presence of AASS was confirmed in layers consistent with indications from the field screening tests. Although deeper layers of AASS were indicated in AM-BH5, AM-BH7, AM-BH8 and in samples from AM-BH17 were field screening had not previously indicated AASS. Closer inspection of these results suggests that minor oxidisation may have occurred these samples at the laboratory between field screening and the Chromium Suite testing – for the purposes of this assessment we have considered these suspect results to indicate PASS rather than AASS. Excluding these suspect results, AASS materials across the site have required liming rates for net acidity ranging from about 4 kg/m^3 to 30 kg/m^3.
- Net Acidity in PASS materials varies considerably across the site. In general the PASS material towards the southern and northern ends of the site have indicated liming rates ranging from about 15 kg/m^3 to 60 kg/m^3. Through the centre of the site (AM-BH7, AM-BH8, AM-BH17, AM-BH28, BIP/ASS2, BIP/ASS3,BIP/ASS4, AM-BH31 and AM-BH32) much higher net acidity was indicated with liming rates generally ranging from about 90 kg/m^3 to 180 kg/m^3 and as high as 320 kg/m^3 in one sample (AM-BH17, 0.21-0.04m AD).

Table 7: Summary of Acid Sulfate Soil Test Results (Chromium Suite)

	Test Location	Depth Range (m - BGL)	Depth Range (m - AD)	Material Description	pH_{FIELD}	pH_{KCl}	sTAA %S	S_{NAS} (if pH less than 4.5)	Existing Acidity %S (sTAA + 0.75 x S_{NAS})	Chromium Reducible Sulfur (S_{CR}) %S**	Acid Neutralising Capacity %CaCO3 (if pH more than 6.5)	Net Acidity %S (S_{CR}+Existing Acidity - ANC/FF)	Is This AASS	Is This PASS	Liming Rate for Existing Acidity (Neutralises AASS only) (kg/m3)	Liming Rate for Net Acidity (Neutralises both AASS & PASS) (kg/m3)
Original Investigation	AMBH01	0.75 1.00	2.24 1.99	CLAY	4.00	4.2	0.140	0.03	0.163	< 0.005		0.163	**YES**	No	12.3	12.3
	AMBH01	1.50 1.75	1.49 1.24	Clayey SAND	4.20	5.0	0.020		0.020	< 0.005		0.020	No	No	NA	1.5
	AMBH01	2.75 3.00	0.24 -0.01	SAND	6.90	4.8	0.020		0.020	**0.217**		0.237	No	YES	NA	17.9
	AMBH02	0.75 1.00	1.75 1.50	Sandy CLAY	4.60	4.3	0.100	0.03	0.123	0.006		0.129	**YES**	No	9.3	9.7
	AMBH02	1.50 1.75	1.00 0.75	CLAY	6.50	5.6	< 0.020		0.000	**0.177**		0.177	No	YES	NA	13.4
	AMBH02	2.50 2.75	0.00 -0.25	SAND	6.60	5.4	< 0.020		0.000	**0.080**		0.080	No	YES	NA	6.0
	AMBH03	0.75 1.00	2.17 1.92	CLAY	4.20	4.2	0.100	0.06	0.145	0.008		0.153	**YES**	No	11.0	11.6
	AMBH03	1.25 1.50	1.67 1.42	Sandy CLAY	4.30	4.6	0.060		0.060	0.005		0.065	**YES**	No	4.5	4.9
	AMBH03	2.00 2.25	0.92 0.67	SAND	6.00	5.0	< 0.020		0.000	**0.152**		0.152	No	YES	NA	11.5
	AMBH04	0.75 1.00	1.92 1.67	Sandy CLAY	4.00	4.2	0.120	0.050	0.158	0.005		0.163	**YES**	No	11.9	12.3
	AMBH04	1.50 1.75	1.17 0.92	SAND	4.20	4.7	0.040		0.040	0.017		0.057	**YES**	No	3.0	4.3
	AMBH04	2.75 3.00	-0.08 -0.33	SAND	7.00	6.3	< 0.020		0.000	**0.284**		0.284	No	YES	NA	21.5
	AMBH05	1.00 1.25	1.50 1.25	CLAY	3.90	4.1	0.080	0.02	0.095	< 0.005		0.095	**YES**	No	7.2	7.2
	AMBH05	2.25 2.50	0.25 0.00	SAND	5.80	4.4	0.050	0.03	0.073	**0.350**		0.423	No*	YES	NA	31.9
	AMBH06	0.50 0.75	2.00 1.75	Sandy CLAY	4.30	4.5	0.060		0.060	< 0.005		0.060	**YES**	No	4.5	4.5
	AMBH06	1.25 1.50	1.25 1.00	CLAY	4.10	4.6	0.060		0.060	0.028		0.088	**YES**	No	4.5	6.7
	AMBH06	2.25 2.50	0.25 0.00	Sandy CLAY	6.20	4.1	0.100	0.040	0.130	**1.240**		1.370	No	YES	NA	103.6
	AMBH07	0.75 1.00	2.45 2.20	Sandy CLAY	3.90	4.1	0.120	0.07	0.173	0.005		0.178	**YES**	No	13.0	13.4
	AMBH07	2.00 2.25	1.20 0.95	Clayey SAND	6.30	4.5	0.060		0.060	**0.600**		0.660	No*	YES	NA	49.9
	AMBH07	2.75 3.00	0.45 0.20	Clayey SAND	7.20	4.7	0.050		0.050	**1.180**		1.230	No*	YES	NA	93.0

Note: *Considered as PASS - possible oxidisation in lab between field screening and Chromium suite analysis

Liming rates assume a bulk density of 1.60 t/m3

Fineness Facto 1.5

** Values in bold and highlighted grey exceed the ASS Action Criteria

Table 7: Summary of Acid Sulfate Soil Test Results (Chromium Suite)

	Test Location	Depth Range (m - BGL)	Depth Range (m - AD)	Material Description	pH_{FIELD}	pH_{KCl}	sTAA %S	S_{NAS} (if pH less than 4.5)	Existing Acidity %S (sTAA + 0.75 x S_{NAS})	Chromium Reducible Sulfur (S_{CR}) %S**	Acid Neutralising Capacity %CaCO3 (if pH more than 6.5)	Net Acidity %S (S_{CR}+Existing Acidity - ANC/FF)	Is This AASS	Is This PASS	Liming Rate for Existing Acidity (Neutralises AASS only) (kg/m3)	Liming Rate for Net Acidity (Neutralises both AASS & PASS) (kg/m3)
Original Investigation	AMBH08	0.75 1.00	2.13 1.88	CLAY	3.90	4.4	0.100	0.030	0.123	**0.032**		0.155	**YES**	No	9.3	11.7
	AMBH08	1.75 2.00	1.13 0.88	Sandy CLAY	6.20	4.2	0.130	0.03	0.153	**1.160**		1.313	No*	YES	NA	99.2
	AMBH08	2.75 3.00	0.13 -0.12	CLAY	7.00	4.3	0.120	0.03	0.143	**1.790**		1.933	No*	YES	NA	146.1
	AMBH09	0.75 1.00	2.55 2.30	Sandy CLAY	3.80	3.8	0.140	< 0.02	0.140	0.019		0.159	**YES**	No	10.6	12.0
	AMBH09	1.50 1.75	1.80 1.55	CLAY	4.50	3.9	0.140	0.03	0.163	0.024		0.187	**YES**	No	12.3	14.1
	AMBH09	2.75 3.00	0.55 0.30	SAND	4.80	4.9	0.020		0.020	0.009		0.029	No	No	NA	NA
	AMBH17	0.75 1.00	1.71 1.46	Sandy CLAY	8.00	5.1	0.130		0.130	**1.760**		1.890	No*	No	NA	142.9
	AMBH17	2.25 2.50	0.21 -0.04	CLAY	8.40	3.9	0.270	0.15	0.383	**3.840**		4.223	No*	YES	NA	319.3
	AMBH19	0.50 0.75	2.12 1.87	CLAY	4.50	4.3	0.320	0.030	0.343	**0.051**		0.394	**YES**	No	25.9	29.8
	AMBH19	2.50 2.75	0.12 -0.13	SAND	6.20	5.0	0.030		0.030	**0.406**		0.436	No	YES	NA	33.0
	AMBH28	0.50 0.75	2.24 1.99	CLAY	5.40	4.6	0.060		0.060	**0.057**		0.117	**YES**	No	4.5	8.8
	AMBH28	1.50 1.75	1.24 0.99	CLAY	6.90	4.2	0.160	0.04	0.190	**1.390**		1.580	No*	YES	NA	119.5
Supplementary Investigation	AM-BH30	0.25 0.50	2.49 2.24	clayey sandy SILT	3.90	4.6	0.09		0.090	**0.01**		0.100	**YES**	No	6.8	7.6
	AM-BH30	1.50 1.75	1.24 0.99	silty CLAY	7.10	6.2	< 0.020		0.000	**0.333**		0.333	No	YES	NA	25.2
	AM-BH30	2.25 2.50	0.49 0.24	silty CLAY	8.10	6.7	< 0.020		0.000	**1.17**	1.37	0.877	No	YES	NA	66.3
	AM-BH31	0.50 0.75	2.25 2.00	CLAY	3.90	4.9	0.06		0.060	**0.057**		0.117	**YES**	YES	4.5	8.8
	AM-BH31	1.25 1.50	1.50 1.25	CLAY	5.80	5.7	0.04		0.040	**1.15**		1.190	No*	YES	NA	90.0
	AM-BH31	2.75 3.00	0.00 -0.25	clayey SAND	7.80	5.2	0.03		0.030	**1.18**		1.210	No	YES	NA	91.5
	AM-BH32	0.00 0.25	2.64 2.39	clayey sandy SILT	4.40	7.4	< 0.020		0.000	**0.037**	1.24	-0.228	No	YES	No Additional Lime Required	No Additional Lime Required
	AM-BH32	1.00 1.25	1.64 1.39	CLAY	5.20	4.5	0.11		0.110	**0.269**		0.379	**YES**	YES	8.3	28.7
	AM-BH32	2.00 2.25	0.64 0.39	silty CLAY	6.60	4.7	0.07		0.070	**2.31**		2.380	No*	YES	NA	180.0

Note: *Considered as PASS - possible oxidisation in lab between field screening and Chromium suite analysis

Liming rates assume a bulk density of 1.60 t/m3

Fineness Facto 1.5

** Values in bold and highlighted grey exceed the ASS Action Criteria

Table 7: Summary of Acid Sulfate Soil Test Results (Chromium Suite)

	Test Location	Depth Range (m - BGL)	Depth Range (m - AD)	Material Description	pH_{FIELD}	pH_{KCl}	sTAA %S	S_{NAS} (if pH less than 4.5)	Existing Acidity %S (sTAA + 0.75 x S_{NAS})	Chromium Reducible Sulfur (S_{CR}) %S**	Acid Neutralising Capacity %CaCO3 (if pH more than 6.5)	Net Acidity %S (S_{CR}+Existing Acidity - ANC/FF)	Is This AASS	Is This PASS	Liming Rate for Existing Acidity (Neutralises AASS only) (kg/m3)	Liming Rate for Net Acidity (Neutralises both AASS & PASS) (kg/m3)
Previous Investigation	BIP/ASS1	0.75 1.00		LC dk grey		6.5	< 0.020		0.000	0.11		0.110	No	YES	NA	8.3
	BIP/ASS2	0.00 0.25		LS dk brown organic		3.8	0.2	0.14	0.305	< 0.020		0.305	YES	No	23.1	23.1
	BIP/ASS2	1.00 1.25		LS dk grey organic		4.8	0.07		0.070	0.19		0.260	YES	YES	5.3	19.7
	BIP/ASS2	1.75 2.00		HC dk grey		7.5	< 0.020		0.000	**1.77**		1.770	No	YES	NA	133.8
	BIP/ASS3	0.00 0.25		LC dk brown organics		3.9	0.34	0.32	0.580	0.02		0.600	YES	No	43.9	45.4
	BIP/ASS3	1.25 1.50		HC dk brown organic		8.1	< 0.020		0.000	**1.99**		1.990	No	YES	NA	150.5
	BIP/ASS4	0.00 0.10		L dk brown		8.6	< 0.020		0.000	**0.75**		0.750	No	YES	NA	56.7
	BIP/ASS4	0.25 0.50		LC grey		4.3	0.07	0.110	0.153	**0.08**		0.233	YES	No	11.5	17.6
	BIP/ASS4	1.25 1.50		MC dk brown		6.7	< 0.020		0.000	**1.15**		1.150	No	YES	NA	87.0
	BIP/ASS5	0.65 0.75		LS dk brown organic		4.5	0.11		0.110	**0.04**		0.150	YES	No	8.3	11.3
	BIP/ASS5	1.75 2.00		HC dk brown organic		5.6	< 0.020		0.000	**0.65**		0.650	No	YES	NA	49.2
	BIP/ASS6	0.00 0.25		HC dk grey		4.1	0.18	< 0.02	0.180	**0.08**		0.260	**YES**	No	13.6	19.7
	BIP/ASS6	0.75 1.00		HC dk grey		4.3	0.07	0.12	0.160	**0.03**		0.190	**YES**	No	12.1	14.4
	BIP/ASS6	1.75 2.00		HC dk grey		6.0	< 0.020		0.000	**0.28**		0.280	No	YES	NA	21.2
	BIP/ASS7	1.00 1.25		HC dk grey		4.1	0.07	< 0.02	0.070	**0.03**		0.100	YES	No	5.3	NA
	BIP/ASS8	0.50 0.75		MC dk grey		5.5	0.05		0.000	**0.23**		0.230	No	YES	NA	17.4
	BIP/ASS8	1.75 2.00		LC dk grey		6.2	< 0.020		0.000	**0.82**		0.820	No	YES	NA	62.0
	BIP/ASS9	0.00 0.25		LC grey		4.4	0.1	0.080	0.160	**0.03**		0.190	**YES**	No	12.1	14.4
	BIP/ASS9	1.25 1.50		HC dk grey		4.4	0.06	< 0.02	0.060	**0.03**		0.090	**YES**	No	4.5	6.8
	BIP/ASS10	0.50 0.75		LC grey		4.1	0.35		0.350	**0.04**		0.390	**YES**	No	26.5	29.5

Note: *Considered as PASS - possible oxidisation in lab between field screening and Chromium suite analysis

Liming rates assume a bulk density of 1.60 t/m3

Fineness Facto 1.5

** Values in bold and highlighted grey exceed the ASS Action Criteria

8.5 Groundwater Quality

The laboratory results of groundwater analysed for ASS parameters presented in Appendix C and summarised in Table 8, below.

Table 8: Groundwater Quality Test Results

Sample Location	Sample Dates	pH*	EC* mS/cm	Dissolved Fe mg/L	Dissol-ved Al mg/L	Cl^-: SO_4^{++} mgL (Ratio)	Total Acidity mg/L	Total Alkalinity mg/L
AM-BH01	4/01/2016	5.74	34.6	122	3.59	11400:3640 (3.1)	374	32
AM-BH04	4/01/2016	6.06	24	118	<0.05	7560:3140 (2.4)	353	33
AM-BH08	4/01/2016	5.69	23.7	125	<0.05	6920:4800 (1.4)	372	84
AM-BH19	4/01/2016	5.68	32.5	117	0.06	11300:1940 (5.8)	392	11
AM-BH28	4/01/2016	6.06	39.9	29.8	<0.05	13500:2570 (5.3)	176	300
BIP/MW1	4/01/2016	4.3	22	294	8.18	7480:2340 (3.2)	735	<1
BIP/MW2	4/01/2016	6.5	43.1	53.8	<0.05	14600:2410 (6.1)	120	524
BP/MW6	4/01/2016	6.86	42.8	22.0	<0.05	14200:2960 (4.8)	121	911
BAC-MW07	4/01/2016	6.6	36.8	24.9	<0.05	12600:1690 (7.5)	213	1300
BAC-MW24	4/01/2016	6.85	50.6	37.1	<0.05	18000:1340 (13.4)	139	800
AM-MW31	25/10/2016	6.20	31.1	12.2	0.10	13300:2620 (5.1)	242	341

Notes: Rainfall in the 30 days prior to 4/01/2016 sampling round was 230mm and 30 days prior to 25/10/2016 was 35.6mm.
*Field measurement

The laboratory results indicated:

- Electrical conductivity ranging from 22 to 50 mS/cm indicating saline water conditions.
- pH levels ranging from 4.3 to 6.85 (with lowest levels in wells along the western site boundary) indicating acidic to near neutral conditions.
- The buffering capacity of the wells varied across the site. The northern end of Stage 1 area had very high alkalinity with a Class 1 buffering capacity (i.e. adequate to maintain acceptable pH level in the future). The remainder of the Stage 1 area had a moderate alkalinity with a Class 3 buffering capacity (i.e. inadequate to maintain stable, acceptable pH level in areas vulnerable to acidification). It was noted that BIP/MW1 which is hydraulically downgradient of the site was acidic with a Class 5 buffering capacity (i.e. unacceptable pH level under all circumstances) and is likely to indicate historical disturbance (ASS dewatering) in this area.
- Dissolved aluminium concentrations of greater than about 1 mg/L in groundwater may be an indicator of AASS. Concentrations where below the laboratory detection limit, with the exception of AM-BH01 (3.59 mg/L), AM-BH19 (0.06 mg/L) and BIP/MW1 (8.18 mg/L). These detected concentrations were also above the Airports (Environmental Protection) Regulations accepted limits for contamination of fresh water of 0.1 mg/L. Concentrations of dissolved aluminium detected at AM-BH01 and BIP/MW1 during this investigation indicate active ASS impact in the groundwater.
- Dissolved iron concentrations ranged from 12.2 to 294 mg/L.
- The Chloride:Sulfate (Cl^-: SO_4^{++}) ratios indicate past oxidation of PASS in this area. This is with the exception of BAC-MW07 and BAC-MW-24 which have Chloride to Sulfate ratios greater than 7 which is that of sea water.

Overall the groundwater results suggest a variable or historically disturbed environment at the investigation locations.

9.0 CONCLUSIONS

The following conclusions have been drawn from the ASS assessment at the Auto Precinct Stage 1 area:

- Investigations of the Stage 1 investigation area indicated that AASS materials are present from the ground surface to levels about 0.8m AD and 1.2m AD and deeper in isolated pockets where previous localised ground disturbances may have occurred. AASS has been detected in materials below the water table which indicates that the groundwater table has been historically lowered in this area. Calculated liming rates to neutralise net acidity in the identified AASS materials (from all investigations) range from about 5 kg/m^3 to 45 kg/m^3.

- PASS materials underlie the AASS materials across the site. Net Acidity in PASS materials varies considerably across the site. Calculated liming rates to neutralise net acidity in the identified PASS materials towards the northern and southern ends of Stage 1 range from about 15 kg/m^3 to 67 kg/m^3. Through the centre of the site much higher net acidity was indicated with liming rates generally ranging from about 90 kg/m^3 to 180 kg/m^3 and as high as 320 kg/m^3 in one sample which commences from 1.46 m AD to -0.25 m AD.

- Groundwater samples suggested a variable or historically disturbed environment. The groundwater has suitable available buffering capacity to maintain an acceptable pH level in the presence of minor acid generation at the northern end of the Stage 1 investigation area. However, groundwater samples from the remainder of the site indicate a buffering capacity inadequate to maintain stable, acceptable pH level in areas vulnerable to acidification. Acid conditions and aluminium concentrations above the Airports (Environmental Protection) Regulations accepted limit were detected in two groundwater samples.

The presence of ASS and low buffering capacity of groundwater have the following implications to the currently proposed development:

- All site excavations will disturb ASS and will require management measures including lime treatment of excavated spoil. Excavation of the proposed perimeter drains to RL 0.2 m AD will result in AASS and PASS spoil which may require separate management measures.

- Filling and surcharging/preloading of the site will result in further AASS being “pushed” below the water table. Surcharging/preloading will also cause a slight mounding of the local water table and result in the temporary saturation of AASS. Both of these issues will result in the release of acid to the groundwater and the subsequent stripping and mobilisation of metals. Acid and metals impacted groundwater may discharge to the surface and/or shallow drains immediately surrounding the site and migrate towards (and discharge into) Landers Pocket Drain. Potential mitigation/management strategies for this issue include:

  - Construction of a lime trench along the western site boundary (or eastern side of the proposed drain along this boundary) to buffer acidic groundwater moving off site. The lime trench would need to extend below the AASS/PASS interface and would comprise a slot trench filled with a mix of agricultural lime and limestone chips.

  - Placement of a 10m wide strip of surface lime ‘guard layer’ along the eastern and southern perimeters of the site under the edge of the fill embankment, prior to filling. This is to neutralise acidic seepage/runoff leaving the site along these boundaries.

  - Installation of limestone filled ‘check’ dams across internal surface drains during construction period and at the end of drains upstream of any connection with Landers Pocket Drain, to neutralise acid ‘flushes’ that may occur. Note that the limestone chips would require monitoring and regular replacement.

  - Monitoring and possible treatment of seepage water collected from any wick drains employed, before discharge off site.

- The proposed perimeter drains will intercept the water table and may result in a zone of localised groundwater depression. Acid and metals impacted groundwater may discharge into the drain. Potential mitigation/management strategies for this issue include:
  - Option 1: Construct a concrete lined drain to maintain groundwater levels outside of the drain and prevent inflow of acidic and degraded groundwater.
  - Option 2: Placement of a lime trench on either side of the drainage channel to neutralise groundwater inflow (this may still allow iron and other metals to floc in the drain and could require additional management measures).

10.0 RECOMMENDATIONS

Based on the investigation findings at the Stage 1 Auto Mall Precinct, it is recommended that:

- A site specific ASS EMP be prepared to manage development disturbances across the Stage 1 investigation area and surcharging practices.

11.0 IMPORTANT INFORMATION

Your attention is drawn to the document titled - “Important Information Relating to this Report”, which is included in Appendix D of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

Report Signature Page

GOLDER ASSOCIATES PTY LTD

Emma Cornish Environmental Scientist	Paul Scells Principal

ERC/PKS/

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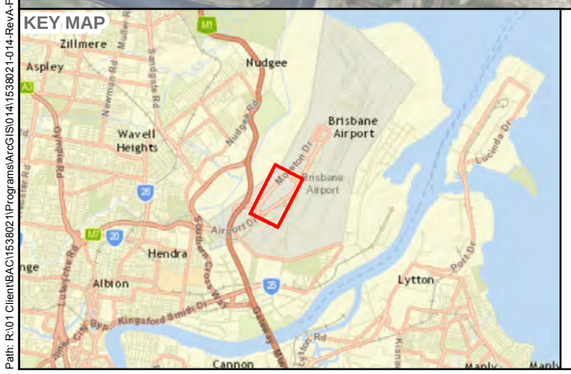
Figures



LEGEND

Current Investigation

- Acid Sulfate Soils
- Monitoring Well

Previous Investigation

- Acid Sulfate Soils
- Monitoring Well
- Site Boundary

NOTES

1. AERIAL PHOTOGRAPHY SUPPLIED BY NEARMAP LTD, DATED OCTOBER 2014
2. DEVELOPMENT YIELD PLAN LAYOUT SUPPLIED BY BAC AS CAD FILE 'BRIS0012 SK-004[E] DEVELOPMENT YIELD PLAN.PDF.DWG'
3. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P CORP., NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI (THAILAND), MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

0 100 200 300
metres

REFERENCE SCALE: 1:4,500 (AT A3)
PROJECTION: GDA 1994 MGA ZONE 56

CLIENT
BRISBANE AIRPORT CORPORATION

PROJECT
AUTO PRECINCT

TITLE
PROPOSED DEVELOPMENT WITH PREVIOUS AND CURRENT ASS INVESTIGATION LOCATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-30
PREPARED	DP
DESIGN	DP
REVIEW	EC
APPROVED	EC

PROJECT No.	CONTROL	Rev.	FIGURE
1538021	014	A	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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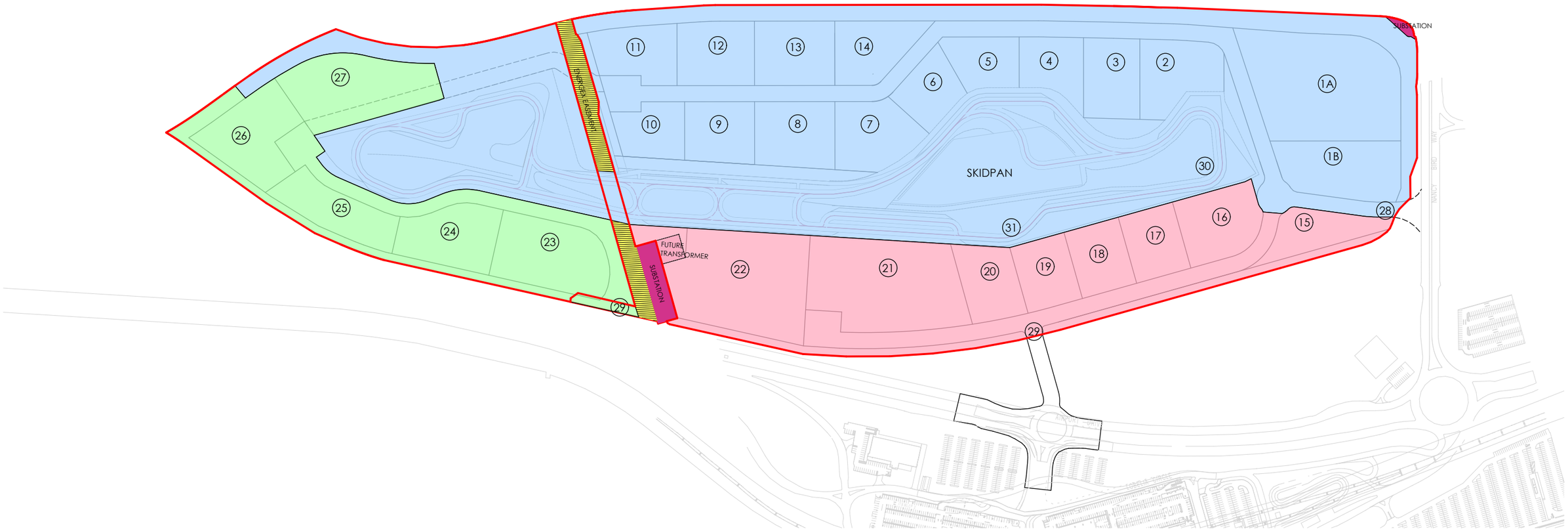
APPENDIX A

Development Staging Plan



INDICATIVE STAGE ONE

INDICATIVE STAGE TWO

INDICATIVE STAGE THREE

BAC

BAC DRIVER EXPERIENCE CENTRE

STAGING PLAN

MLDesign

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0 25.0 50.0 100 150 200 250m

SCALE: 1:5000 @ A3 APPROVED FOR ISSUE:___BT DATE: 23.08.16 PROJECT NO: BRIS0012 MP-SK-017(I)

APPENDIX B

Borehole Reports

REPORT OF BOREHOLE: AM-BH01

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510581.9 m E 6969493.9 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.99 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 16/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
ADH	L	16/12/15 08:30	-1.0									0.9 m stick up PVC; 50 mm dia. PVC
			-0.5									
			-0.0	2.99	J 0.00-0.50 m R = 0A PID = 1.3 ppm			SM	Silty SAND fine to medium grained, brown, with some rootlets up to 2 mm dia	D		Concrete
				0.25 / 2.74				CL	Sandy CLAY low plasticity, dark brown, fine grained sand, - dark brown high plasticity clay lense 50mm thick from 0.3m depth	M		Bentonite seal
			0.5		J 0.50-1.00 m R = 0A PID = 1.4 ppm							
				0.65 / 2.34				CH	CLAY high plasticity, brown with pockets of orange, with some fine sand			
			1.0		J 1.00-1.50 m R = 0A PID = 1.1 ppm							
				1.20 / 1.79				SC	Clayey SAND fine to medium grained, grey with pockets of pale brown and orange	M - W		Filter sand
			1.5		J 1.50-2.00 m R = 0A PID = 0.7 ppm							
				1.80 / 1.19				SP	SAND fine to medium grained, grey	W		0.4 mm aperture slots
			2.0		J 2.00-2.50 m R = 0A							
			2.5		J 2.50-3.00 m R = 0A PID = 0.3 ppm							
			3.0	-0.01					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.30 m DEPTH STANDPIPE INSTALLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			End cap
			3.5									
			4.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

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REPORT OF BOREHOLE: AM-BH02

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510535 m E 6969436 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.5 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: BJV DATE: 16/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	16/12/15	0.0	2.50	J 0.00-0.50 m R = 0A PID = 1.8 ppm			SM	Silty SAND fine to medium grained, brown	D		
				0.30								
				2.20				CL	Sandy CLAY low plasticity, brown with pockets of orange/red, fine grained sand			
			0.5		J 0.50-1.00 m R = 0A PID = 1.6 ppm							
				0.70								
				1.80					dark brown high plasticity clay 150 mm thick, trace wood, organic odour			
				0.85								
				1.65				CI	CLAY medium plasticity, brown with pockets of orange, trace fine sand			
			1.0		J 1.00-1.50 m R = 0B PID = 1 ppm							
				1.10								
				1.40				CH	CLAY high plasticity, grey, Sulphide/Sulphate odour	M		
			1.5		J 1.50-2.00 m R = 0B PID = 0.7 ppm							
				1.80								
				0.70				CI	Sandy CLAY low plasticity, grey, fine to medium grained sand			
			2.0		J 2.00-2.50 m R = 0A PID = 0.8 ppm							
				2.20								
				0.30				SP	SAND fine to medium grained, grey			
			2.5		J 2.50-3.00 m R = 0A					W		
			3.0	-0.50					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 2.20 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH03

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510422.6 m E 6969350.5 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.92 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: BJV DATE: 16/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	16/12/15	0.0	2.92	J 0.00-0.50 m R = 0A PID = 1.3 ppm			SM	Silty SAND fine to medium grained, brown, trace fine, subangular gravel	D		
				0.10 2.82				CL	Sandy CLAY low plasticity, brown with orange pockets, trace wood fragents	D - M		
			0.5	0.55 2.37	J 0.50-1.00 m R = 0A PID = 1.5 ppm			CI	CLAY medium plasticity, dark brown with orange pockets, trace fine sand			
				0.70 2.22				CH	CLAY high plasticity, brown			
				0.90 2.02				CI	Sandy CLAY medium plasticity, grey, fine grained sand			
			1.0		J 1.00-1.50 m R = 0A PID = 0.6 ppm					M		
			1.5	1.50 1.42	J 1.50-2.00 m R = 0A PID = 0.6 ppm			SP	SAND fine to medium grained, grey, with some clay to 2.0 m			
			2.0		J 2.00-2.50 m R = 0A PID = 1 ppm							
			2.5		J 2.50-3.00 m R = 0A PID = 0.3 ppm					W		
			3.0	-0.08					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 2.00 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH04

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510354.2 m E 6969321.2 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.67 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: BJV DATE: 16/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
			-1.0									1.0 m stick up PVC
			-0.5									50 mm dia. PVC
ADH	L	16/12/15	-0.0	2.67	J 0.00-0.50 m R = 0A PID = 1 ppm			SM	Silty SAND fine to medium grained, brown	D		Concrete
				0.20 2.47				CI	CLAY medium plasticity, brown with pockets of orange			Bentonite seal
			0.5		J 0.50-1.00 m R = 0A PID = 1 ppm							
				0.70 1.97				CI	Sandy CLAY high plasticity, dark brown, fine to medium grained sand	M		Filter sand
				0.85 1.82					grey below 0.85 m			
			1.0		J 1.00-1.50 m R = 0A PID = 1 ppm							
				1.20 1.47				SP	SAND fine to medium grained, grey, trace clay			
			1.5		J 1.50-2.00 m R = 0A PID = 0.4 ppm							
			2.0		J 2.00-2.50 m R = 0A PID = 0.9 ppm					W		0.4 mm aperture slots
			2.5		J 2.50-3.00 m R = 0A PID = 0.2 ppm							
			3.0	-0.33					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.20 m DEPTH STANDPIPE INSTALLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			End cap
			3.5									
			4.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

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REPORT OF BOREHOLE: AM-BH05

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510265 m E 6969259 m N MGA94 56	DRILL RIG: Comacchio 305		
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.5 m DATUM: AD	CONTRACTOR: MGS		
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: BJV	DATE: 16/12/15	
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB	DATE: 21/1/16	

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	16/12/15	0.0	2.50	J 0.00-0.50 m R = 0A PID = 0.6 ppm			SM	Silty SAND fine to medium grained, brown	D		
				0.33 2.17				CL-CI	CLAY low to medium plasticity, brown to dark brown with orange pockets	M		
			0.5	0.60 1.90	J 0.50-1.00 m R = 0A PID = 0.4 ppm			CH	CLAY high plasticity, dark brown			
				0.70 1.80				CL-CI	CLAY low to medium plasticity, brown to dark brown with orange pockets			
			1.0	1.30	J 1.00-1.50 m R = 0A PID = 0.3 ppm							
				1.20				SP	SAND fine to medium grained, grey, with some clay to 1.8 m depth	W		
			1.5		J 1.50-2.00 m R = 0A PID = 1.5 ppm							
			2.0		J 2.00-2.50 m R = 0A PID = 1.2 ppm							
			2.5		J 2.50-3.00 m R = 0A PID = 1.1 ppm							
			3.0	-0.50					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.30 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH06

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510162 m E 6969192 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.5 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 16/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	16/12/15	0.0	2.50	J 0.00-0.50 m R = 0A PID = 1.5 ppm			SM	Silty SAND fine to medium grained, brown	D		
				0.25								
				0.30					trace wood fragments 10 to 20 mm			
				2.20				CL	Sandy CLAY low plasticity, brown with orange pockets, fine grained sand	M		
			0.5		J 0.50-1.00 m R = 0A PID = 1.4 ppm							
				0.80								
				1.70				CH	CLAY high plasticity, dark brown			
				0.90								
				1.60				CI	Sandy CLAY medium plasticity, brown with orange pockets, fine sand			
			1.0		J 1.00-1.50 m R = 0A PID = 0.6 ppm							
				1.20								
				1.30				CH	CLAY high plasticity, grey			
			1.5		J 1.50-2.00 m R = 0A PID = 1.2 ppm							
				1.60								
				0.90				CI-CH	Sandy CLAY medium to high plasticity, grey, fine sand			
			2.0		J 2.00-2.50 m R = 0A PID = 0.4 ppm					M - W		
			2.5		J 2.50-3.00 m R = 0A PID = 0.3 ppm							
			3.0	-0.50					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.60 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH07

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510045 m E 6969158 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 3.2 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	17/12/15	0.0	3.20	J 0.00-0.50 m R = 0A PID = 1.6 ppm			SM	Silty SAND fine to medium grained, brown, trace roolets 2mm dia	D		FILL
				0.20								
				0.28				CI	Sandy CLAY medium plasticity, pale brown to brown, fine grained sand			
				2.92					Clayey COBBLES coarse, to 80 mm, angular, uniform sized, brown, with some fine grained sand			
			0.5	0.60	J 0.50-1.00 m R = 0A PID = 1.9 ppm							
				2.60				CL	Sandy CLAY low plasticity, brown with orange pockets, fine grained sand, trace fine to angular gravel			NATURAL
			1.0	1.00						M		
				2.20	J 1.00-1.50 m R = 0A PID = 1.6 ppm			CH	CLAY high plasticity, dark brown			
				1.10								
				2.10				CI	Sandy CLAY medium plasticity, brown with orange pockets, fine to medium grained sand			
			1.5	1.60	J 1.50-2.00 m R = 0A PID = 0.5 ppm							
				1.60					becoming grey			
				1.80								
				1.40				SC	Clayey SAND fine to medium grained, grey, trace wood fragments up to 4 mm to 2.4 m depth			
			2.0		J 2.00-2.50 m R = 0A PID = 1.6 ppm							
										W		
			2.5		J 2.50-3.00 m R = 0A PID = 1.2 ppm							
			3.0	0.20					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.80 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH08

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509991.0 m E 6969080.1 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.88 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
ADH	L	Groundwater not observed	-1.0									0.63 m stick up PVC (Monument cover); 50 mm dia. PVC
			-0.5									
			-0.0	2.88	J 0.00-0.50 m R = 0A PID = 1.8 ppm			SM	Silty SAND fine to medium grained, brown, with some anugular gravel up to 35 mm dia.	D		concrete; Bentonite seal
				0.35 / 2.53				CL	Sandy CLAY low plasticity, brown, fine grained sand	D - M		
			0.5		J 0.50-1.00 m R = 0A PID = 2.4 ppm							
				0.70 / 2.18				CI	CLAY medium plasticity, brown with orange pockets, trace rootlets			
			1.0		J 1.00-1.50 m R = 0A PID = 2.5 ppm							
				1.25 / 1.63				CH	CLAY high plasticity, dark brown			Filter sand
			1.5		J 1.50-2.00 m R = 0A							
				1.70 / 1.18				CI	Sandy CLAY medium plasticity, grey, fine to medium grained sand, trace wood fragments	M		0.4 mm aperture slots
			2.0		J 2.00-2.50 m R = 0A PID = 1.9 ppm							
			2.5		J 2.50-3.00 m R = 0A PID = 1.5 ppm							
				2.60 / 0.28				CH	CLAY high plasticity, grey			
			3.0	-0.12					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT OBSERVED STANDPIPE INSTALLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			End cap
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH09

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509916 m E 6969013 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 3.3 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L		0.0	3.30	J 0.00-0.50 m R = 0A PID = 1.6 ppm			SM	Silty SAND fine to medium grained, brown, trace rootlets			FILL
				0.10								
	H			3.20					Clayey COBBLES to 100 mm, angular, uniform sized, grey, with some fine to medium grained sand	D		
			0.5		J 0.50-1.00 m R = 0A PID = 1.9 ppm							
				0.65								
	L			2.65				CI	Sandy CLAY medium plasticity, pale brown, fine sand	D - M		NATURAL
			1.0	1.00								
				2.30	J 1.00-1.50 m R = 0A PID = 1.6 ppm			CL	Sandy CLAY low plasticity, brown with orange pockets, fine sand			
				1.15								
				1.20				CI	CLAY high plasticity, dark brown to black, trace wood fragments			
				2.10				CH	CLAY high plasticity, dark brown to grey	M		
			1.5		J 1.50-2.00 m R = 0A PID = 0.5 ppm							
		17/12/15		1.75								
				1.55				SC	Clayey SAND fine to medium grained, grey			
			2.0		J 2.00-2.50 m R = 0A PID = 1.6 ppm							
				2.40						W		
				0.90				SP	SAND fine to medium grained, grey, with some clay			
			2.5		J 2.50-3.00 m R = 0A PID = 1.2 ppm							
			3.0	0.30					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.75 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH17

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510320.0 m E 6968843.5 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.46 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 18/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	Groundwater not observed	0.0	2.46	PID = 2.4 ppm			CH	Sandy CLAY medium plasticity, brown, fine to medium sand	D		
				0.35 2.11					with some medium to coarse, angular gravel			
			0.5	0.60 1.86	J 0.50-1.00 m R = 0A PID = 2 ppm			CI	Sandy CLAY medium plasticity, brown/grey, fine to coarse sand, Sulphide/Sulphate odour			
				0.97 1.49				CH	CLAY high plasticity, grey, trace wood fragements up to 20 mm dia			
			1.0		J 1.00-1.50 m R = 0A							
			1.5		J 1.50-2.00 m R = 0B PID = 1.5 ppm					M		
			2.0		J 2.00-2.50 m R = 0B PID = 2.3 ppm							
			2.5		J 2.50-3.00 m R = 0A PID = 1.5 ppm							
			3.0	-0.54					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH19

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509999.2 m E 6968856.0 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.62 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
ADH	L	17/12/15	-1.0									0.61 m stick up PVC (Monument cover); 50 mm dia. PVC
			-0.5									
			-0.0	0.05 / 2.57	J 0.00-0.50 m R = 0A PID = 1 ppm			SM	Silty SAND fine to medium grained, brown, trace rootlets	D		Cement
								CL / CI	CLAY low to medium plasticity, dark brown, trace rootlets	D - M		Bentonite seal
			0.5	0.60 / 2.02	J 0.50-1.00 m R = 0A PID = 1.3 ppm				dark brown/ black lense 200 mm thick			
				0.80 / 1.82				CH	CLAY high plasticity, grey/brown, trace wood fragments	M		
			1.0		J 1.00-1.50 m R = 0A PID = 1.1 ppm							
				1.20 / 1.42				SP	SAND fine to medium grained, grey, trace rootlets up to 25 m dia.			
			1.5		J 1.50-2.00 m R = 0A PID = 1.3 ppm							Filter sand
			2.0		J 2.00-2.50 m R = 0A PID = 1.3 ppm					M - W		0.4 mm aperture slots
			2.5		J 2.50-3.00 m R = 0A PID = 0.2 ppm							
			3.0	-0.38					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 2.20 m DEPTH STANDPIPE INSTALLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			End cap
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH28

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510532.6 m E 6969155.6 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.74 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 18/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
			-1.0									0.59 m stick up PVC; 50 mm dia. PVC
			-0.5									
ADH	L		0.0	2.74	J 0.00-0.50 m R = 0A			SP	Silty SAND fine to medium grained, brown, trace rootlets up to 10 mm dia.	D		Cement
				0.30								
				2.44				CL	Sandy CLAY low plasticity, brown, fien to medium sand, trace rootlets			Bentonite seal
				0.45								
			0.5	2.29	J 0.50-1.00 m R = 0A PID = 0.4 ppm			CH	CLAY high plasticity, brown, trace rootlets	D - M		
				0.70								
				2.04				CH	CLAY high plasticity, dark brown			
			1.0		J 1.00-1.50 m R = 0A							
			1.5		J 1.50-2.00 m R = 0B PID = 0.5 ppm							Filter sand
				1.60								
				1.14					becoming grey, trace wood fragments up to 5 mm, Sulphide/Sulphate odour	M		
			2.0		J 2.00-2.50 m R = 0B							0.4 mm aperture slots
		18/12/15	2.5	2.50								
				0.24	J 2.50-3.00 m R = 0A PID = 0.4 ppm			SP	SAND fine to medium grained, grey, with some clay	W		
			3.0	-0.26					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 2.50 m DEPTH STANDPIPE INSTALLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			End cap
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH30

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510351.3 m E 6969177.0 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.74 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 10/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	10/10/16	0.0	2.74	ASS 0.00-0.25 m R = 0A PID = 3.2 ppm			ML-MH	Clayey Sandy SILT medium liquid limit, brown, fine to medium sand, trace rootelts	D - M		NATURAL
				0.20 2.54	ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			CI-CH	Silty CLAY medium to high plasticity, grey brown, with some fine to medium grain sand, trace rootlets			
			0.5	0.40 2.34	ASS 0.50-0.75 m R = 0A PID = 3.9 ppm ASS 0.75-1.00 m R = 0A			CH	Silty CLAY high plasticity, dark grey			
			1.0	0.85 1.89	J 0.75-1.00 m R = 0A ASS 1.00-1.25 m R = 0A PID = 4.2 ppm			CH	Silty CLAY high plasticity, brown grey, with some fine to medium grain sand			
				1.15 1.59	ASS 1.25-1.50 m R = 0A				trace fine to medium sand from 1.15 m to 1.35 m			
			1.5	1.40 1.34	ASS 1.50-1.75 m R = 0A PID = 4 ppm ASS 1.75-2.00 m R = 0A J 1.75-2.00 m R = 0A				colour change to dark grey	M		
			2.0		ASS 2.00-2.25 m R = 0A PID = 3.4 ppm ASS 2.25-2.50 m R = 0A							
			2.5		ASS 2.50-2.75 m R = 0A PID = 4.4 ppm J 2.75-3.00 m R = 0A							
			3.0	-0.26					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH31/MW31

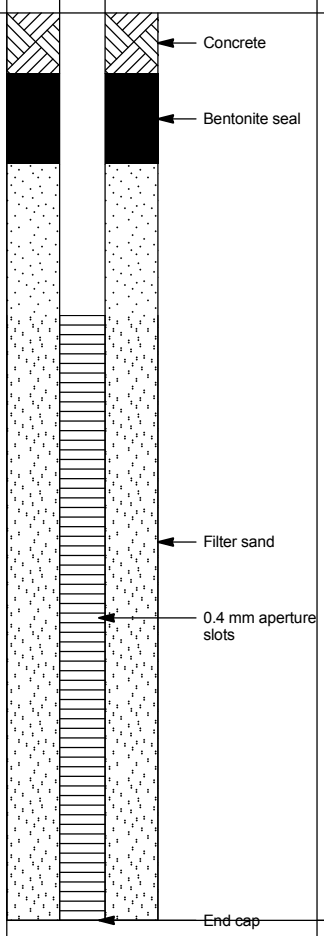
SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510224.5 m E 6969041.3 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.75 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 10/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION / CONSISTENCY / DENSITY
PT	L	25/10/16	-1.0							
			-0.5							
			0.0	2.75	ASS 0.00-0.25 m R = 1A			ML-MH	Clayey Sandy SILT medium liquid limit, brown, fine to medium sand, trace rootlets	
				0.10 / 2.65	PID = 2.8 ppm			CH	Silty CLAY medium to high plasticity, brown mottled orange, with some fine to medium grain sand	D - M
					ASS 0.25-0.50 m R = 1A J 0.25-0.50 m R = 1A					
			0.5	0.50 / 2.25	ASS 0.50-0.75 m R = 0A PID = 3.3 ppm			CH	CLAY high plasticity, dark grey	
					ASS 0.75-1.00 m R = 0A J 0.75-1.00 m R = 0A					
			1.0	0.95 / 1.00				CI	Sandy CLAY dark grey, fine to medium sand	
				1.75 / 1.10 / 1.65	ASS 1.00-1.25 m R = 0A PID = 3.6 ppm			SC		
								CH	Clayey SAND fine to medium grained, grey	
					ASS 1.25-1.50 m R = 0A				CLAY high plasticity, dark grey	M
			1.5		ASS 1.50-1.75 m R = 0A PID = 3.3 ppm					
					ASS 1.75-2.00 m R = 0A J 1.75-2.00 m R = 0A					
			2.0		ASS 2.00-2.25 m R = 0A PID = 3.1 ppm					
				2.35 / 0.40 / 2.45	ASS 2.25-2.50 m R = 0A				increasing fine to medium sand content	
			2.5	2.55 / 0.20 / 2.65 / 0.10	ASS 2.50-2.75 m R = 0A PID = 2.6 ppm			CI	Sandy CLAY medium plasticity, dark grey, fine to medium sand	
								SC	Clayey SAND fine to medium grained, dark grey	W
								SM	Silty SAND fine to medium grained, dark grey, with some low to medium plasticity clay	
					ASS 2.75-3.00 m R = 0A J 2.75-3.00 m R = 0A					
			3.0	-0.25					END OF BOREHOLE @ 3.00 m TARGET DEPTH STANDPIPE INSTALLED	
			3.5							
			4.0							

PIEZOMETER DETAILS



This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01d RL3

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REPORT OF BOREHOLE: AM-BH32

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510120.5 m E 6969060.4 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.64 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 10/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	10/10/16	0.0	2.64	ASS 0.00-0.25 m R = 0A PID = 2.6 ppm			ML-MH	Clayey Sandy SILT medium liquid limit, brown, fine to medium sand, trace rootlets	D - M		NATURAL
					ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A							
			0.5	0.50 2.14	ASS 0.50-0.75 m R = 0A PID = 2.3 ppm			CH	CLAY high plasticity, dark grey	M		
					ASS 0.75-1.00 m R = 0A J 0.75-1.00 m R = 0A							
			1.0		ASS 1.00-1.25 m R = 0A PID = 2.3 ppm							
				1.25 1.39 1.35 1.29	ASS 1.25-1.50 m R = 0A			CI CH	Sandy CLAY medium plasticity, dark grey, fine to medium sand, trace rootlets Silty CLAY high plasticity, dark grey	M - W		
			1.5		ASS 1.50-1.75 m R = 0A PID = 2.9 ppm							
				1.80 0.84	ASS 1.75-2.00 m R = 0A J 1.75-2.00 m R = 0A				trace rootlets from 1.8 m to 2.0 m			
			2.0		ASS 2.00-2.25 m R = 0A PID = 2.7 ppm							
					ASS 2.25-2.50 m R = 0A							
			2.5		ASS 2.50-2.75 m R = 0A PID = 2.6 ppm							
				2.70 -0.06 2.80 2.85 -0.21	ASS 2.75-3.00 m R = 0A J 2.75-3.00 m R = 0A			CI SC	Sandy CLAY medium plasticity, dark grey, fine to medium sand increasing sand content, fine to medium grain Clayey SAND fine to medium grained, grey, trace rootlets	W		
			3.0	-0.36					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

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APPENDIX C

Laboratory Documents

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1538408**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015 16:00
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 08-Jan-2016 15:39
Site	: ----		
		No. of samples received	: 72
Quote number	: ----	No. of samples analysed	: 55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Shobhna Chandra	Metals Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- Due to a Laboratory Error analysis on sample EB1538408-030 (AM-BH02-2.75-3.00) could not be conducted.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- PFOS and PFOA results are reported as an aggregate of linear and branched isomers.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH01 0.00-0.25	AM-BH01 0.25-0.50	AM-BH01 0.50-0.75	AM-BH01 0.75-1.00	AM-BH01 1.00-1.25
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-001	EB1538408-002	EB1538408-003	EB1538408-004	EB1538408-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.5	4.2	4.2	4.0	4.0
pH (Fox)	----	0.1	pH Unit	2.4	2.4	2.4	2.4	2.4
Reaction Rate	----	1	-	3	2	2	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH01 1.25-1.50	AM-BH01 1.50-1.75	AM-BH01 1.75-2.00	AM-BH01 2.00-2.25	AM-BH01 2.25-2.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-006	EB1538408-007	EB1538408-008	EB1538408-009	EB1538408-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.0	4.2	4.7	6.2	6.6
pH (Fox)	----	0.1	pH Unit	2.2	2.3	2.6	1.9	1.9
Reaction Rate	----	1	-	2	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH01 2.50-2.75	AM-BH01 2.75-3.00	AM-BH01 0.00-0.50	AM-BH01 2.50-3.00	Q1
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-011	EB1538408-012	EB1538408-013	EB1538408-018	EB1538408-019
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.8	6.9	----	----	----
pH (Fox)	----	0.1	pH Unit	1.8	2.2	----	----	----
Reaction Rate	----	1	-	3	4	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	13.7	20.3	21.0
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	<0.0005
PFOA	335-67-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	<0.001	<0.001	<0.001
PFOSA	754-91-6	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	<0.001	<0.001	<0.001
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	<0.001	<0.001	<0.001
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	<0.001	<0.001	<0.001
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	<0.001	<0.001	<0.001
PFBS	375-73-5	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFHxS	355-46-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFDcS	67906-42-7	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFHxA	307-24-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFHpA	375-85-9	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFNA	375-95-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFDcA	335-76-2	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFUnA	2058-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFDoA	307-55-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFTriA	72629-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFTeA	376-06-7	0.001	mg/kg	----	----	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH02 0.00-0.25	AM-BH02 0.50-0.75	AM-BH02 0.75-1.00	AM-BH02 1.00-1.25	AM-BH02 1.25-1.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-020	EB1538408-021	EB1538408-022	EB1538408-023	EB1538408-024
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	5.2	4.6	4.6	5.7	6.0
pH (Fox)	----	0.1	pH Unit	2.9	2.7	2.4	2.9	3.8
Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH02 1.50-1.75	AM-BH02 1.75-2.00	AM-BH02 2.00-2.25	AM-BH02 2.25-2.50	AM-BH02 2.50-2.75
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-025	EB1538408-026	EB1538408-027	EB1538408-028	EB1538408-029
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.5	6.8	6.6	6.6	6.6
pH (Fox)	----	0.1	pH Unit	2.1	2.0	2.1	2.1	1.9
Reaction Rate	----	1	-	3	4	4	4	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH02 0.00-0.50	AM-BH02 1.00-1.50	AM-BH03 0.00-0.25	AM-BH03 0.25-0.50	AM-BH03 0.50-0.75
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-031	EB1538408-033	EB1538408-037	EB1538408-038	EB1538408-039
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	----	5.3	4.3	4.2
pH (Fox)	----	0.1	pH Unit	----	----	2.9	2.3	1.9
Reaction Rate	----	1	-	----	----	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	36.6	37.2	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	<0.001	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	----	----	----
PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH03 0.75-1.00	AM-BH03 1.00-1.25	AM-BH03 1.25-1.50	AM-BH03 1.50-1.75	AM-BH03 1.75-2.00
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-040	EB1538408-041	EB1538408-042	EB1538408-043	EB1538408-044
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.2	4.4	4.3	4.6	5.8
pH (Fox)	----	0.1	pH Unit	2.3	2.4	2.4	2.7	2.7
Reaction Rate	----	1	-	2	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH03 2.00-2.25	AM-BH03 2.25-2.50	AM-BH03 2.50-2.75	AM-BH03 2.75-3.00	AM-BH03 0.00-0.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-045	EB1538408-046	EB1538408-047	EB1538408-048	EB1538408-049
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.0	6.3	6.4	6.5	----
pH (Fox)	----	0.1	pH Unit	1.8	2.1	2.2	2.2	----
Reaction Rate	----	1	-	3	4	4	4	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	13.8
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	<0.0005
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	<0.005
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	<0.001
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	<0.001
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	<0.001
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	<0.001
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	<0.001
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH03 1.00-1.50	AM-BH04 0.00-0.25	AM-BH04 0.25-0.50	AM-BH04 0.50-0.75	AM-BH04 0.75-1.00
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-051	EB1538408-055	EB1538408-056	EB1538408-057	EB1538408-058
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	4.2	4.0	3.9	4.0
pH (Fox)	----	0.1	pH Unit	----	1.9	2.0	2.0	2.1
Reaction Rate	----	1	-	----	3	3	3	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	25.5	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	<0.0005	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH04 1.00-1.25	AM-BH04 1.25-1.50	AM-BH04 1.50-1.75	AM-BH04 1.75-2.00	AM-BH04 2.00-2.25
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-059	EB1538408-060	EB1538408-061	EB1538408-062	EB1538408-063
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.0	4.1	4.2	6.1	6.1
pH (Fox)	----	0.1	pH Unit	2.3	2.3	2.1	2.4	2.3
Reaction Rate	----	1	-	2	2	2	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH04 2.25-2.50	AM-BH04 2.50-2.75	AM-BH04 2.75-3.00	AM-BH04 0.00-0.50	AM-BH04 0.50-1.00
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-064	EB1538408-065	EB1538408-066	EB1538408-067	EB1538408-068
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.2	6.7	7.0	----	----
pH (Fox)	----	0.1	pH Unit	2.5	2.5	2.2	----	----
Reaction Rate	----	1	-	4	4	4	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	24.4	17.9
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
PFOA	335-67-1	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	<0.005	<0.005
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	<0.001	<0.001
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	<0.001	<0.001
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	<0.001	<0.001
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	<0.001	<0.001
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	<0.001	<0.001
PFBS	375-73-5	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFNA	375-95-1	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFTeA	376-06-7	0.001	mg/kg	----	----	----	<0.001	<0.001

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1538408**	Page	: 1 of 8
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 08-Jan-2016
Site	: ----	No. of samples received	: 72
Quote number	: ----	No. of samples analysed	: 55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Shobhna Chandra	Metals Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA037: Ass Field Screening Analysis (QC Lot: 318589)									
EB1538408-001	AM-BH01 0.00-0.25	EA037: pH (F)	----	0.1	pH Unit	4.5	4.5	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.4	2.3	4.26	0% - 20%
EB1538408-011	AM-BH01 2.50-2.75	EA037: pH (F)	----	0.1	pH Unit	6.8	6.7	1.48	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	1.8	1.9	5.40	0% - 50%
EA037: Ass Field Screening Analysis (QC Lot: 318590)									
EB1538408-028	AM-BH02 2.25-2.50	EA037: pH (F)	----	0.1	pH Unit	6.6	6.7	1.50	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.1	2.1	0.00	0% - 20%
EB1538408-044	AM-BH03 1.75-2.00	EA037: pH (F)	----	0.1	pH Unit	5.8	5.9	1.71	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.7	2.8	3.64	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 318591)									
EB1538408-060	AM-BH04 1.25-1.50	EA037: pH (F)	----	0.1	pH Unit	4.1	4.1	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.3	2.4	4.26	0% - 20%
EA055: Moisture Content (QC Lot: 319728)									
EB1538408-068	AM-BH04 0.50-1.00	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	17.9	17.1	4.82	0% - 50%
EA055: Moisture Content (QC Lot: 320540)									
ES1539443-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	<1.0	<1.0	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319989)									
EB1538415-036	Anonymous	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1538408-013	AM-BH01 0.00-0.50	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231: Perfluorinated Compounds (QC Lot: 319989) - continued									
EB1538408-013	AM-BH01 0.00-0.50	EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319990)									
EB1538415-036	Anonymous	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
EB1538408-013	AM-BH01 0.00-0.50	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 321095)									
EB1538408-049	AM-BH03 0.00-0.50	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 321096)									
EB1538408-049	AM-BH03 0.00-0.50	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231: Perfluorinated Compounds (QC Lot: 321096) - continued									
EB1538408-049	AM-BH03 0.00-0.50	EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231: Perfluorinated Compounds (QCLot: 319989)								
EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	0.00625 mg/kg	82.6	50	130
EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	0.00625 mg/kg	73.0	30	130
EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	0.00625 mg/kg	110	50	130
EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	0.00625 mg/kg	118	30	130
EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.5	50	130
EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	50	130
EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.7	50	130
EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.9	50	130
EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	50	130
EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	36	130
EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	50	130
EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.3	50	130
EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	0.00625 mg/kg	73.7	30	130
EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.6	30	130
EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)								
EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	0.00625 mg/kg	122	56	138
EP231: 8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.8	54	134
EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	54	146
EP231: Perfluorinated Compounds (QCLot: 321095)								
EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	0.00625 mg/kg	80.6	50	130
EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	0.00625 mg/kg	99.5	30	130
EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	0.00625 mg/kg	107	50	130
EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	0.00625 mg/kg	128	30	130
EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	68.4	50	130
EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	50	130
EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	50	130
EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	50	130
EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	50	130
EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	36	130
EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.8	50	130
EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	50	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231: Perfluorinated Compounds (QCLot: 321095) - continued								
EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.1	50	130
EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	0.00625 mg/kg	72.7	30	130
EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.2	30	130
EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	50	130
EP231: Perfluorinated Compounds (QCLot: 321096)								
EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	0.00625 mg/kg	105	56	138
EP231: 8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	100	54	134
EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	111	54	146

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231: Perfluorinated Compounds (QCLot: 319989)							
EB1538408-013	AM-BH01 0.00-0.50	EP231-PFC: N-Et-FOSA	4151-50-2	0.00625 mg/kg	116	50	130
		EP231-PFC: N-Et-FOSE	1691-99-2	0.00625 mg/kg	114	30	130
		EP231-PFC: N-Me-FOSA	31506-32-8	0.00625 mg/kg	127	50	130
		EP231-PFC: N-Me-FOSE	2448-09-7	0.00625 mg/kg	106	30	130
		EP231-PFC: PFBS	375-73-5	0.00125 mg/kg	103	50	130
		EP231-PFC: PFDcA	335-76-2	0.00125 mg/kg	69.2	50	130
		EP231-PFC: PFDcS	67906-42-7	0.00125 mg/kg	67.7	50	130
		EP231-PFC: PFDoA	307-55-1	0.00125 mg/kg	113	50	130
		EP231-PFC: PFHpA	375-85-9	0.00125 mg/kg	101	50	130
		EP231-PFC: PFHxA	307-24-4	0.00125 mg/kg	79.3	30	130
		EP231-PFC: PFHxS	355-46-4	0.00125 mg/kg	106	50	130
		EP231-PFC: PFNA	375-95-1	0.00125 mg/kg	81.3	50	130
		EP231-PFC: PFOSA	754-91-6	0.00125 mg/kg	71.7	50	130
		EP231-PFC: PFTeA	376-06-7	0.00625 mg/kg	65.5	30	130
		EP231-PFC: PFTriA	72629-94-8	0.00125 mg/kg	114	30	130
		EP231-PFC: PFUnA	2058-94-8	0.00125 mg/kg	123	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)							
EB1538408-013	AM-BH01 0.00-0.50	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.00625 mg/kg	131	56	138
		EP231: PFOA	335-67-1	0.00125 mg/kg	100	54	134
		EP231: PFOS	1763-23-1	0.00125 mg/kg	107	54	146

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP231: Perfluorinated Compounds (QCLot: 321095)							
EB1538408-049	AM-BH03 0.00-0.50	EP231-PFC: N-Et-FOSA	4151-50-2	0.00625 mg/kg	121	50	130
		EP231-PFC: N-Et-FOSE	1691-99-2	0.00625 mg/kg	104	30	130
		EP231-PFC: N-Me-FOSA	31506-32-8	0.00625 mg/kg	108	50	130
		EP231-PFC: N-Me-FOSE	2448-09-7	0.00625 mg/kg	107	30	130
		EP231-PFC: PFBS	375-73-5	0.00125 mg/kg	71.7	50	130
		EP231-PFC: PFDcA	335-76-2	0.00125 mg/kg	80.2	50	130
		EP231-PFC: PFDcS	67906-42-7	0.00125 mg/kg	83.8	50	130
		EP231-PFC: PFDoA	307-55-1	0.00125 mg/kg	80.9	50	130
		EP231-PFC: PFHpA	375-85-9	0.00125 mg/kg	97.8	50	130
		EP231-PFC: PFHxA	307-24-4	0.00125 mg/kg	74.0	30	130
		EP231-PFC: PFHxS	355-46-4	0.00125 mg/kg	77.7	50	130
		EP231-PFC: PFNA	375-95-1	0.00125 mg/kg	110	50	130
		EP231-PFC: PFOSA	754-91-6	0.00125 mg/kg	66.3	50	130
		EP231-PFC: PFTeA	376-06-7	0.00625 mg/kg	68.0	30	130
		EP231-PFC: PFTriA	72629-94-8	0.00125 mg/kg	86.6	30	130
		EP231-PFC: PFUnA	2058-94-8	0.00125 mg/kg	115	50	130
EP231: Perfluorinated Compounds (QCLot: 321096)							
EB1538408-049	AM-BH03 0.00-0.50	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.00625 mg/kg	117	56	138
		EP231: PFOA	335-67-1	0.00125 mg/kg	104	54	134
		EP231: PFOS	1763-23-1	0.00125 mg/kg	108	54	146

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1538408**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61-7-3243 7222
Project	: 1538021	Date Samples Received	: 18-Dec-2015
Site	: ----	Issue Date	: 08-Jan-2016
Sampler	: TAMARA SICCAMA	No. of samples received	: 72
Order number	: 1538021	No. of samples analysed	: 55

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Moisture Content	2	24	8.33	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH01 0.00-0.25,	AM-BH01 0.25-0.50,	**16-Dec-2015**	**31-Dec-2015**	13-Jun-2016	✓	**31-Dec-2015**	13-Jun-2016	✓
AM-BH01 0.50-0.75,	AM-BH01 0.75-1.00,							
AM-BH01 1.00-1.25,	AM-BH01 1.25-1.50,							
AM-BH01 1.50-1.75,	AM-BH01 1.75-2.00,							
AM-BH01 2.00-2.25,	AM-BH01 2.25-2.50,							
AM-BH01 2.50-2.75,	AM-BH01 2.75-3.00,							
AM-BH02 0.00-0.25,	AM-BH02 0.50-0.75,							
AM-BH02 0.75-1.00,	AM-BH02 1.00-1.25,							
AM-BH02 1.25-1.50,	AM-BH02 1.50-1.75,							
AM-BH02 1.75-2.00,	AM-BH02 2.00-2.25,							
AM-BH02 2.25-2.50,	AM-BH02 2.50-2.75,							
AM-BH03 0.00-0.25,	AM-BH03 0.25-0.50,							
AM-BH03 0.50-0.75,	AM-BH03 0.75-1.00,							
AM-BH03 1.00-1.25,	AM-BH03 1.25-1.50,							
AM-BH03 1.50-1.75,	AM-BH03 1.75-2.00,							
AM-BH03 2.00-2.25,	AM-BH03 2.25-2.50,							
AM-BH03 2.50-2.75,	AM-BH03 2.75-3.00,							
AM-BH04 0.00-0.25,	AM-BH04 0.25-0.50,							
AM-BH04 0.50-0.75,	AM-BH04 0.75-1.00,							
AM-BH04 1.00-1.25,	AM-BH04 1.25-1.50,							
AM-BH04 1.50-1.75,	AM-BH04 1.75-2.00,							
AM-BH04 2.00-2.25,	AM-BH04 2.25-2.50,							
AM-BH04 2.50-2.75,	AM-BH04 2.75-3.00							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH01 0.00-0.50, Q1, AM-BH02 1.00-1.50, AM-BH04 0.50-1.00	AM-BH01 2.50-3.00, AM-BH02 0.00-0.50, AM-BH04 0.00-0.50,	**16-Dec-2015**	**----**	----	----	**23-Dec-2015**	30-Dec-2015	✓
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH03 0.00-0.50,	AM-BH03 1.00-1.50	**16-Dec-2015**	**----**	----	----	**24-Dec-2015**	30-Dec-2015	✓
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231)								
AM-BH01 0.00-0.50, Q1, AM-BH02 1.00-1.50, AM-BH04 0.50-1.00	AM-BH01 2.50-3.00, AM-BH02 0.00-0.50, AM-BH04 0.00-0.50,	**16-Dec-2015**	**24-Dec-2015**	13-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
Soil Glass Jar - Unpreserved (EP231)								
AM-BH03 0.00-0.50,	AM-BH03 1.00-1.50	**16-Dec-2015**	**30-Dec-2015**	13-Jun-2016	✓	**30-Dec-2015**	08-Feb-2016	✓
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231-PFC)								
AM-BH01 0.00-0.50, Q1, AM-BH02 1.00-1.50, AM-BH04 0.50-1.00	AM-BH01 2.50-3.00, AM-BH02 0.00-0.50, AM-BH04 0.00-0.50,	**16-Dec-2015**	**24-Dec-2015**	13-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
Soil Glass Jar - Unpreserved (EP231-PFC)								
AM-BH03 0.00-0.50,	AM-BH03 1.00-1.50	**16-Dec-2015**	**30-Dec-2015**	13-Jun-2016	✓	**30-Dec-2015**	08-Feb-2016	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	5	46	**10.87**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	2	24	**8.33**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	3	22	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	3	22	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	SOIL	In-House. A portion of soil is soaked in sodium hydroxide followed by extraction with methanol. The extract is neutralised with HCl and an aliquot taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.
Perfluorinated Compounds by LCMSMS	EP231-PFC	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Drying only	EN020D	SOIL	In House

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1538408**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 4
Order number	: 1538021	Quote number	: EM2015GOLASS0592 (EN-002-15)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: TAMARA SICCAMA		

Dates

Date Samples Received	: 18-Dec-2015 4:00 PM	Issue Date	: 22-Dec-2015
Client Requested Due Date	: 04-Jan-2016	Scheduled Reporting Date	: **04-Jan-2016**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 6	Temperature	: 6.3, 8.2, 9.1, 0.9, 3.2, 3.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 72 / 56

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFOS/PFOA analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The expected due date for this data is 11/01/2015.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS
EB1538408-001	[16-Dec-2015]	AM-BH01 0.00-0.25		✓		
EB1538408-002	[16-Dec-2015]	AM-BH01 0.25-0.50		✓		
EB1538408-003	[16-Dec-2015]	AM-BH01 0.50-0.75		✓		
EB1538408-004	[16-Dec-2015]	AM-BH01 0.75-1.00		✓		
EB1538408-005	[16-Dec-2015]	AM-BH01 1.00-1.25		✓		
EB1538408-006	[16-Dec-2015]	AM-BH01 1.25-1.50		✓		
EB1538408-007	[16-Dec-2015]	AM-BH01 1.50-1.75		✓		
EB1538408-008	[16-Dec-2015]	AM-BH01 1.75-2.00		✓		
EB1538408-009	[16-Dec-2015]	AM-BH01 2.00-2.25		✓		
EB1538408-010	[16-Dec-2015]	AM-BH01 2.25-2.50		✓		
EB1538408-011	[16-Dec-2015]	AM-BH01 2.50-2.75		✓		
EB1538408-012	[16-Dec-2015]	AM-BH01 2.75-3.00		✓		
EB1538408-013	[16-Dec-2015]	AM-BH01 0.00-0.50			✓	✓
EB1538408-014	[16-Dec-2015]	AM-BH01 0.50-1.00	✓			
EB1538408-015	[16-Dec-2015]	AM-BH01 1.00-1.50	✓			
EB1538408-016	[16-Dec-2015]	AM-BH01 1.50-2.00	✓			
EB1538408-017	[16-Dec-2015]	AM-BH01 2.00-2.50	✓			
EB1538408-018	[16-Dec-2015]	AM-BH01 2.50-3.00			✓	✓
EB1538408-019	[16-Dec-2015]	Q1			✓	✓
EB1538408-020	[16-Dec-2015]	AM-BH02 0.00-0.25		✓		
EB1538408-021	[16-Dec-2015]	AM-BH02 0.50-0.75		✓		
EB1538408-022	[16-Dec-2015]	AM-BH02 0.75-1.00		✓		
EB1538408-023	[16-Dec-2015]	AM-BH02 1.00-1.25		✓		
EB1538408-024	[16-Dec-2015]	AM-BH02 1.25-1.50		✓		
EB1538408-025	[16-Dec-2015]	AM-BH02 1.50-1.75		✓		
EB1538408-026	[16-Dec-2015]	AM-BH02 1.75-2.00		✓		
EB1538408-027	[16-Dec-2015]	AM-BH02 2.00-2.25		✓		
EB1538408-028	[16-Dec-2015]	AM-BH02 2.25-2.50		✓		
EB1538408-029	[16-Dec-2015]	AM-BH02 2.50-2.75		✓		
EB1538408-030	[16-Dec-2015]	AM-BH02 2.75-3.00		✓		
EB1538408-031	[16-Dec-2015]	AM-BH02 0.00-0.50			✓	✓
EB1538408-032	[16-Dec-2015]	AM-BH02 0.50-1.00	✓			
EB1538408-033	[16-Dec-2015]	AM-BH02 1.00-1.50			✓	✓
EB1538408-034	[16-Dec-2015]	AM-BH02 1.50-2.00	✓			
EB1538408-035	[16-Dec-2015]	AM-BH02 2.00-2.50	✓			

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS
EB1538408-036	[16-Dec-2015]	AM-BH02 2.50-3.00	✓			
EB1538408-037	[16-Dec-2015]	AM-BH03 0.00-0.25		✓		
EB1538408-038	[16-Dec-2015]	AM-BH03 0.25-0.50		✓		
EB1538408-039	[16-Dec-2015]	AM-BH03 0.50-0.75		✓		
EB1538408-040	[16-Dec-2015]	AM-BH03 0.75-1.00		✓		
EB1538408-041	[16-Dec-2015]	AM-BH03 1.00-1.25		✓		
EB1538408-042	[16-Dec-2015]	AM-BH03 1.25-1.50		✓		
EB1538408-043	[16-Dec-2015]	AM-BH03 1.50-1.75		✓		
EB1538408-044	[16-Dec-2015]	AM-BH03 1.75-2.00		✓		
EB1538408-045	[16-Dec-2015]	AM-BH03 2.00-2.25		✓		
EB1538408-046	[16-Dec-2015]	AM-BH03 2.25-2.50		✓		
EB1538408-047	[16-Dec-2015]	AM-BH03 2.50-2.75		✓		
EB1538408-048	[16-Dec-2015]	AM-BH03 2.75-3.00		✓		
EB1538408-049	[16-Dec-2015]	AM-BH03 0.00-0.50			✓	✓
EB1538408-050	[16-Dec-2015]	AM-BH03 0.50-1.00	✓			
EB1538408-051	[16-Dec-2015]	AM-BH03 1.00-1.50			✓	✓
EB1538408-052	[16-Dec-2015]	AM-BH03 1.50-2.00	✓			
EB1538408-053	[16-Dec-2015]	AM-BH03 2.00-2.50	✓			
EB1538408-054	[16-Dec-2015]	AM-BH03 2.50-3.00	✓			
EB1538408-055	[16-Dec-2015]	AM-BH04 0.00-0.25		✓		
EB1538408-056	[16-Dec-2015]	AM-BH04 0.25-0.50		✓		
EB1538408-057	[16-Dec-2015]	AM-BH04 0.50-0.75		✓		
EB1538408-058	[16-Dec-2015]	AM-BH04 0.75-1.00		✓		
EB1538408-059	[16-Dec-2015]	AM-BH04 1.00-1.25		✓		
EB1538408-060	[16-Dec-2015]	AM-BH04 1.25-1.50		✓		
EB1538408-061	[16-Dec-2015]	AM-BH04 1.50-1.75		✓		
EB1538408-062	[16-Dec-2015]	AM-BH04 1.75-2.00		✓		
EB1538408-063	[16-Dec-2015]	AM-BH04 2.00-2.25		✓		
EB1538408-064	[16-Dec-2015]	AM-BH04 2.25-2.50		✓		
EB1538408-065	[16-Dec-2015]	AM-BH04 2.50-2.75		✓		
EB1538408-066	[16-Dec-2015]	AM-BH04 2.75-3.00		✓		
EB1538408-067	[16-Dec-2015]	AM-BH04 0.00-0.50			✓	✓
EB1538408-068	[16-Dec-2015]	AM-BH04 0.50-1.00			✓	✓
EB1538408-069	[16-Dec-2015]	AM-BH04 1.00-1.50	✓			
EB1538408-070	[16-Dec-2015]	AM-BH04 1.50-2.00	✓			
EB1538408-071	[16-Dec-2015]	AM-BH04 2.00-2.50	✓			
EB1538408-072	[16-Dec-2015]	AM-BH04 2.50-3.00	✓			

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	kbiram@golder.com.au

TAMARA SICCAMA

- *AU Certificate of Analysis - NATA (COA)	Email	TSiccama@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	TSiccama@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	TSiccama@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	TSiccama@golder.com.au
- Chain of Custody (CoC) (COC)	Email	TSiccama@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	TSiccama@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	TSiccama@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	TSiccama@golder.com.au

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	HARD	FAX	DISK	EMAIL	BULLETIN BOARD
Email Format:	PDF	Excel	Other	Email Addr	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystal-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
1	AM-BH01	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
2	AM-BH01	0.25	0.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
3	AM-BH01	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
4	AM-BH01	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
5	AM-BH01	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
6	AM-BH01	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
7	AM-BH01	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
8	AM-BH01	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
9	AM-BH01	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
10	AM-BH01	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
11	AM-BH01	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
12	AM-BH01	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
13	AM-BH01	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
14	AM-BH01	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
15	AM-BH01	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
16	AM-BH01	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
17	AM-BH01	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
18	AM-BH01	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N				x	
19	Q1			Soil	16/12/2015		Jar	Chilled	1	N				x	

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other
SAMPLE TYPE = Core(CR)
HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list
Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — **LAB. BATCH NUMBER**

Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

SCANNED

Environmental Division
Brisbane
Work Order Reference
EB1538408

Telephone : + 61-7-3243 7222

SPLIT BATCH
Test Split due to no. of samples
Assoc. Batch No.
EB1538415 & EB1538419

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD**	**FAX** **DISK** **EMAIL**	**BULLETIN BOARD**
Email Format:	**PDF**	**Excel** **Other** **Email Add**	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystal-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
20	AM-BH02	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
	~~AM-BH02~~	~~0.25~~	~~0.50~~	~~Soil~~	~~16/12/2015~~		~~Bag~~	~~Frozen~~	~~1~~	~~N~~		~~x~~	~~x~~		
21	AM-BH02	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
22	AM-BH02	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
23	AM-BH02	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
24	AM-BH02	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
25	AM-BH02	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
26	AM-BH02	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
27	AM-BH02	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
28	AM-BH02	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
29	AM-BH02	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
30	AM-BH02	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
31	AM-BH02	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
32	AM-BH02	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
33	AM-BH02	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
34	AM-BH02	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
35	AM-BH02	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
36	AM-BH02	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N	x				

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory				**LAB. BATCH NUMBER**	
Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days):	**5**	**BY:**	
Report Format:	**HARD** **FAX** **DISK** **EMAIL** **BULLETIN BOARD**		
Email Format:	**PDF** **Excel** **Other** **Email Add:** tsiccama@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: **Krystal-Rae Biram**
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
37	AM-BH03	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
38	AM-BH03	0.25	0.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
39	AM-BH03	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
40	AM-BH03	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
41	AM-BH03	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
42	AM-BH03	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
43	AM-BH03	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
44	AM-BH03	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
45	AM-BH03	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
46	AM-BH03	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
47	AM-BH03	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
48	AM-BH03	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
49	AM-BH03	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
50	AM-BH03	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
51	AM-BH03	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
52	AM-BH03	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
53	AM-BH03	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
54	AM-BH03	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N	x				

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE = Core(CR)** **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		**Chilled**		**LAB. BATCH NUMBER**	
Suitable Containers		**Frozen**		**Bill to:**	
Cool Box		**Ambient**		**Address**	

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	

Report Format: HARD FAX DISK EMAIL BULLETIN BOARD

Email Format: PDF Excel Other Email Add: tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystal-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pH/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
56	AM-BH04	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
57	AM-BH04	0.25	0.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
58	AM-BH04	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
59	AM-BH04	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
60	AM-BH04	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
61	AM-BH04	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
62	AM-BH04	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
63	AM-BH04	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
64	AM-BH04	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
65	AM-BH04	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
66	AM-BH04	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
67	AM-BH04	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
68	AM-BH04	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
69	AM-BH04	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N				x	
70	AM-BH04	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
71	AM-BH04	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
72	AM-BH04	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
	AM-BH04	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N	x				

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory				**LAB. BATCH NUMBER**	
Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1538415**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015 16:00
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 12-Jan-2016 12:51
Site	: ----		
		No. of samples received	: 70
Quote number	: ----	No. of samples analysed	: 55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Nanthini Coilparampi	Laboratory Manager - Inorganics	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- PFOS and PFOA results are reported as an aggregate of linear and branched isomers.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH05 0.00-0.25	AM-BH05 0.25-0.50	AM-BH05 0.50-0.75	AM-BH05 0.75-1.00	AM-BH05 1.00-1.25
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-001	EB1538415-002	EB1538415-003	EB1538415-004	EB1538415-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.7	5.8	4.9	4.1	3.9
pH (Fox)	----	0.1	pH Unit	2.6	3.4	2.9	2.4	2.4
Reaction Rate	----	1	-	3	2	2	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH05 1.25-1.50	AM-BH05 1.50-1.75	AM-BH05 1.75-2.00	AM-BH05 2.00-2.25	AM-BH05 2.25-2.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-006	EB1538415-007	EB1538415-008	EB1538415-009	EB1538415-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.0	4.4	5.3	5.2	5.8
pH (Fox)	----	0.1	pH Unit	2.3	3.0	2.6	2.4	1.9
Reaction Rate	----	1	-	2	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH05 2.50-2.75	AM-BH05 2.75-3.00	AM-BH05 0.50-1.00	AM-BH05 2.50-3.00	AM-BH06 0.00-0.25
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-011	EB1538415-012	EB1538415-014	EB1538415-018	EB1538415-019
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.3	6.6	----	----	4.8
pH (Fox)	----	0.1	pH Unit	2.0	2.2	----	----	2.4
Reaction Rate	----	1	-	4	4	----	----	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	26.6	24.7	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
PFOA	335-67-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	<0.005	<0.005	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	<0.001	<0.001	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	<0.001	<0.001	----
PFBS	375-73-5	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFNA	375-95-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTeA	376-06-7	0.001	mg/kg	----	----	<0.001	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH06 0.25-0.50	AM-BH06 0.50-0.75	AM-BH06 0.75-1.00	AM-BH06 1.00-1.25	AM-BH06 1.25-1.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-020	EB1538415-021	EB1538415-022	EB1538415-023	EB1538415-024
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.3	4.3	4.3	4.2	4.1
pH (Fox)	----	0.1	pH Unit	2.4	2.4	2.2	2.3	2.4
Reaction Rate	----	1	-	3	2	2	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH06 1.50-1.75	AM-BH06 1.75-2.00	AM-BH06 2.00-2.25	AM-BH06 2.25-2.50	AM-BH06 2.50-2.75
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-025	EB1538415-026	EB1538415-027	EB1538415-028	EB1538415-029
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.7	5.5	6.1	6.2	6.8
pH (Fox)	----	0.1	pH Unit	2.6	2.6	1.7	1.6	1.9
Reaction Rate	----	1	-	2	2	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH06 2.75-3.00	AM-BH06 0.50-1.00	AM-BH06 2.50-3.00	AM-BH07 0.00-0.25	AM-BH07 0.50-0.75
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-030	EB1538415-032	EB1538415-036	EB1538415-037	EB1538415-038
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	7.0	----	----	6.4	4.2
pH (Fox)	----	0.1	pH Unit	2.0	----	----	3.2	2.2
Reaction Rate	----	1	-	4	----	----	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	26.9	41.5	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	<0.0005	<0.0005	----	----
PFOA	335-67-1	0.0005	mg/kg	----	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	<0.005	<0.005	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	<0.001	<0.001	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	<0.001	<0.001	----	----
PFBS	375-73-5	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFNA	375-95-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFTeA	376-06-7	0.001	mg/kg	----	<0.001	<0.001	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH07 0.75-1.00	AM-BH07 1.00-1.25	AM-BH07 1.25-1.50	AM-BH07 1.50-1.75	AM-BH07 1.75-2.00
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-039	EB1538415-040	EB1538415-041	EB1538415-042	EB1538415-043
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	3.9	4.6	4.6	5.9	6.2
pH (Fox)	----	0.1	pH Unit	2.0	3.0	2.6	2.9	2.3
Reaction Rate	----	1	-	3	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH07 2.00-2.25	AM-BH07 2.25-2.50	AM-BH07 2.50-2.75	AM-BH07 2.75-3.00	AM-BH07 0.00-0.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-044	EB1538415-045	EB1538415-046	EB1538415-047	EB1538415-048
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.3	6.8	7.0	7.2	----
pH (Fox)	----	0.1	pH Unit	1.4	1.8	1.8	1.9	----
Reaction Rate	----	1	-	4	4	4	4	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	8.4
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	<0.0005
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	<0.005
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	<0.001
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	<0.001
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	<0.001
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	<0.001
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	<0.001
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH07 1.50-2.00	AM-BH08 0.00-0.25	AM-BH08 0.25-0.50	AM-BH08 0.50-0.75	AM-BH08 0.75-1.00
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-050	EB1538415-053	EB1538415-054	EB1538415-055	EB1538415-056
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	7.0	5.9	4.3	3.9
pH (Fox)	----	0.1	pH Unit	----	5.5	3.2	2.3	2.1
Reaction Rate	----	1	-	----	2	3	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	42.5	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	<0.0005	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH08 1.00-1.25	AM-BH08 1.25-1.50	AM-BH08 1.50-1.75	AM-BH08 1.75-2.00	AM-BH08 2.00-2.25
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-057	EB1538415-058	EB1538415-059	EB1538415-060	EB1538415-061
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.2	5.2	4.9	6.2	6.5
pH (Fox)	----	0.1	pH Unit	2.4	2.6	2.5	1.4	1.8
Reaction Rate	----	1	-	2	3	2	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH08 2.25-2.50	AM-BH08 2.50-2.75	AM-BH08 2.75-3.00	AM-BH08 0.00-0.50	AM-BH08 1.00-1.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-062	EB1538415-063	EB1538415-064	EB1538415-065	EB1538415-067
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.9	7.6	7.0	----	----
pH (Fox)	----	0.1	pH Unit	1.8	1.6	1.5	----	----
Reaction Rate	----	1	-	4	4	4	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	12.1	33.2
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
PFOA	335-67-1	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	<0.005	<0.005
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	<0.001	<0.001
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	<0.001	<0.001
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	<0.001	<0.001
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	<0.001	<0.001
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	<0.001	<0.001
PFBS	375-73-5	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFNA	375-95-1	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFTeA	376-06-7	0.001	mg/kg	----	----	----	<0.001	<0.001

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1538415**	Page	: 1 of 6
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
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Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 12-Jan-2016
Site	: ----	No. of samples received	: 70
Quote number	: ----	No. of samples analysed	: 55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
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General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA037: Ass Field Screening Analysis (QC Lot: 318592)									
EB1538415-001	AM-BH05 0.00-0.25	EA037: pH (F)	----	0.1	pH Unit	4.7	4.7	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.6	2.6	0.00	0% - 20%
EB1538415-011	AM-BH05 2.50-2.75	EA037: pH (F)	----	0.1	pH Unit	6.3	6.4	1.57	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.0	2.0	0.00	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 318593)									
EB1538415-027	AM-BH06 2.00-2.25	EA037: pH (F)	----	0.1	pH Unit	6.1	6.0	1.65	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	1.7	1.7	0.00	0% - 50%
EB1538415-043	AM-BH07 1.75-2.00	EA037: pH (F)	----	0.1	pH Unit	6.2	6.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.3	2.2	4.44	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 318594)									
EB1538415-058	AM-BH08 1.25-1.50	EA037: pH (F)	----	0.1	pH Unit	5.2	5.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.6	2.6	0.00	0% - 20%
EA055: Moisture Content (QC Lot: 319728)									
EB1538408-068	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	17.9	17.1	4.82	0% - 50%
EA055: Moisture Content (QC Lot: 319729)									
EB1538419-013	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.8	9.5	13.0	0% - 50%
EB1538478-025	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	19.4	19.6	1.13	0% - 50%
EP231: Perfluorinated Compounds (QC Lot: 319989)									
EB1538415-036	AM-BH06 2.50-3.00	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1538408-013	Anonymous	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231: Perfluorinated Compounds (QC Lot: 319989) - continued									
EB1538408-013	Anonymous	EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319990)									
EB1538415-036	AM-BH06 2.50-3.00	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
EB1538408-013	Anonymous	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231: Perfluorinated Compounds (QCLot: 319989)								
EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	0.00625 mg/kg	82.6	50	130
EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	0.00625 mg/kg	73.0	30	130
EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	0.00625 mg/kg	110	50	130
EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	0.00625 mg/kg	118	30	130
EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.5	50	130
EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	50	130
EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.7	50	130
EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.9	50	130
EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	50	130
EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	36	130
EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	50	130
EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.3	50	130
EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	0.00625 mg/kg	73.7	30	130
EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.6	30	130
EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)								
EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	0.00625 mg/kg	122	56	138
EP231: 8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.8	54	134
EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	54	146

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231: Perfluorinated Compounds (QCLot: 319989)							
EB1538408-013	Anonymous	EP231-PFC: N-Et-FOSA	4151-50-2	0.00625 mg/kg	116	50	130
		EP231-PFC: N-Et-FOSE	1691-99-2	0.00625 mg/kg	114	30	130
		EP231-PFC: N-Me-FOSA	31506-32-8	0.00625 mg/kg	127	50	130
		EP231-PFC: N-Me-FOSE	2448-09-7	0.00625 mg/kg	106	30	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP231: Perfluorinated Compounds (QCLot: 319989) - continued							
EB1538408-013	Anonymous	EP231-PFC: PFBS	375-73-5	0.00125 mg/kg	103	50	130
		EP231-PFC: PFDcA	335-76-2	0.00125 mg/kg	69.2	50	130
		EP231-PFC: PFDcS	67906-42-7	0.00125 mg/kg	67.7	50	130
		EP231-PFC: PFDoA	307-55-1	0.00125 mg/kg	113	50	130
		EP231-PFC: PFHpA	375-85-9	0.00125 mg/kg	101	50	130
		EP231-PFC: PFHxA	307-24-4	0.00125 mg/kg	79.3	30	130
		EP231-PFC: PFHxS	355-46-4	0.00125 mg/kg	106	50	130
		EP231-PFC: PFNA	375-95-1	0.00125 mg/kg	81.3	50	130
		EP231-PFC: PFOSA	754-91-6	0.00125 mg/kg	71.7	50	130
		EP231-PFC: PFTeA	376-06-7	0.00625 mg/kg	65.5	30	130
		EP231-PFC: PFTriA	72629-94-8	0.00125 mg/kg	114	30	130
		EP231-PFC: PFUnA	2058-94-8	0.00125 mg/kg	123	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)							
EB1538408-013	Anonymous	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.00625 mg/kg	131	56	138
		EP231: PFOA	335-67-1	0.00125 mg/kg	100	54	134
		EP231: PFOS	1763-23-1	0.00125 mg/kg	107	54	146

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1538415**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61-7-3243 7222
Project	: 1538021	Date Samples Received	: 18-Dec-2015
Site	: ----	Issue Date	: 12-Jan-2016
Sampler	: TAMARA SICCAMA	No. of samples received	: 70
Order number	: 1538021	No. of samples analysed	: 55

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH05 0.00-0.25,	AM-BH05 0.25-0.50,	**16-Dec-2015**	**31-Dec-2015**	13-Jun-2016	✓	**31-Dec-2015**	13-Jun-2016	✓
AM-BH05 0.50-0.75,	AM-BH05 0.75-1.00,							
AM-BH05 1.00-1.25,	AM-BH05 1.25-1.50,							
AM-BH05 1.50-1.75,	AM-BH05 1.75-2.00,							
AM-BH05 2.00-2.25,	AM-BH05 2.25-2.50,							
AM-BH05 2.50-2.75,	AM-BH05 2.75-3.00,							
AM-BH06 0.00-0.25,	AM-BH06 0.25-0.50,							
AM-BH06 0.50-0.75,	AM-BH06 0.75-1.00,							
AM-BH06 1.00-1.25,	AM-BH06 1.25-1.50,							
AM-BH06 1.50-1.75,	AM-BH06 1.75-2.00,							
AM-BH06 2.00-2.25,	AM-BH06 2.25-2.50,							
AM-BH06 2.50-2.75,	AM-BH06 2.75-3.00,							
AM-BH07 0.00-0.25,	AM-BH07 0.50-0.75,							
AM-BH07 0.75-1.00,	AM-BH07 1.00-1.25,							
AM-BH07 1.25-1.50,	AM-BH07 1.50-1.75,							
AM-BH07 1.75-2.00,	AM-BH07 2.00-2.25,							
AM-BH07 2.25-2.50,	AM-BH07 2.50-2.75,							
AM-BH07 2.75-3.00,	AM-BH08 0.00-0.25,							
AM-BH08 0.25-0.50,	AM-BH08 0.50-0.75,							
AM-BH08 0.75-1.00,	AM-BH08 1.00-1.25,							
AM-BH08 1.25-1.50,	AM-BH08 1.50-1.75,							
AM-BH08 1.75-2.00,	AM-BH08 2.00-2.25,							
AM-BH08 2.25-2.50,	AM-BH08 2.50-2.75,							
AM-BH08 2.75-3.00								
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH05 0.50-1.00,	AM-BH05 2.50-3.00,	**16-Dec-2015**	**----**	----	----	**23-Dec-2015**	30-Dec-2015	✓
AM-BH06 0.50-1.00,	AM-BH06 2.50-3.00,							
AM-BH07 0.00-0.50,	AM-BH07 1.50-2.00,							
AM-BH08 0.00-0.50,	AM-BH08 1.00-1.50							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231)								
AM-BH05 0.50-1.00,	AM-BH05 2.50-3.00,	**16-Dec-2015**	**24-Dec-2015**	13-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH06 0.50-1.00,	AM-BH06 2.50-3.00,							
AM-BH07 0.00-0.50,	AM-BH07 1.50-2.00,							
AM-BH08 0.00-0.50,	AM-BH08 1.00-1.50							
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231-PFC)								
AM-BH05 0.50-1.00,	AM-BH05 2.50-3.00,	**16-Dec-2015**	**24-Dec-2015**	13-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH06 0.50-1.00,	AM-BH06 2.50-3.00,							
AM-BH07 0.00-0.50,	AM-BH07 1.50-2.00,							
AM-BH08 0.00-0.50,	AM-BH08 1.00-1.50							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	5	47	**10.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	3	29	**10.34**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	SOIL	In-House. A portion of soil is soaked in sodium hydroxide followed by extraction with methanol. The extract is neutralised with HCl and an aliquot taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.
Perfluorinated Compounds by LCMSMS	EP231-PFC	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Drying only	EN020D	SOIL	In House

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1538415**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 4
Order number	: ----	Quote number	: EM2015GOLASS0592 (EN-002-15)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 18-Dec-2015 4:00 PM	Issue Date	: 22-Dec-2015
Client Requested Due Date	: 04-Jan-2016	Scheduled Reporting Date	: **04-Jan-2016**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 6	Temperature	: 6.3, 8.2, 9.1, 0.9, 3.2, 3.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 70 / 55

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFOS/PFOA analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The expected due date for his data is 11/01/2016.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS
EB1538415-001	[16-Dec-2015]	AM-BH05 0.00-0.25		✓		
EB1538415-002	[16-Dec-2015]	AM-BH05 0.25-0.50		✓		
EB1538415-003	[16-Dec-2015]	AM-BH05 0.50-0.75		✓		
EB1538415-004	[16-Dec-2015]	AM-BH05 0.75-1.00		✓		
EB1538415-005	[16-Dec-2015]	AM-BH05 1.00-1.25		✓		
EB1538415-006	[16-Dec-2015]	AM-BH05 1.25-1.50		✓		
EB1538415-007	[16-Dec-2015]	AM-BH05 1.50-1.75		✓		
EB1538415-008	[16-Dec-2015]	AM-BH05 1.75-2.00		✓		
EB1538415-009	[16-Dec-2015]	AM-BH05 2.00-2.25		✓		
EB1538415-010	[16-Dec-2015]	AM-BH05 2.25-2.50		✓		
EB1538415-011	[16-Dec-2015]	AM-BH05 2.50-2.75		✓		
EB1538415-012	[16-Dec-2015]	AM-BH05 2.75-3.00		✓		
EB1538415-013	[16-Dec-2015]	AM-BH05 0.00-0.50	✓			
EB1538415-014	[16-Dec-2015]	AM-BH05 0.50-1.00			✓	✓
EB1538415-015	[16-Dec-2015]	AM-BH05 1.00-1.50	✓			
EB1538415-016	[16-Dec-2015]	AM-BH05 1.50-2.00	✓			
EB1538415-017	[16-Dec-2015]	AM-BH05 2.00-2.50	✓			
EB1538415-018	[16-Dec-2015]	AM-BH05 2.50-3.00			✓	✓
EB1538415-019	[16-Dec-2015]	AM-BH06 0.00-0.25		✓		
EB1538415-020	[16-Dec-2015]	AM-BH06 0.25-0.50		✓		
EB1538415-021	[16-Dec-2015]	AM-BH06 0.50-0.75		✓		
EB1538415-022	[16-Dec-2015]	AM-BH06 0.75-1.00		✓		
EB1538415-023	[16-Dec-2015]	AM-BH06 1.00-1.25		✓		
EB1538415-024	[16-Dec-2015]	AM-BH06 1.25-1.50		✓		
EB1538415-025	[16-Dec-2015]	AM-BH06 1.50-1.75		✓		
EB1538415-026	[16-Dec-2015]	AM-BH06 1.75-2.00		✓		
EB1538415-027	[16-Dec-2015]	AM-BH06 2.00-2.25		✓		
EB1538415-028	[16-Dec-2015]	AM-BH06 2.25-2.50		✓		
EB1538415-029	[16-Dec-2015]	AM-BH06 2.50-2.75		✓		
EB1538415-030	[16-Dec-2015]	AM-BH06 2.75-3.00		✓		
EB1538415-031	[16-Dec-2015]	AM-BH06 0.00-0.50	✓			
EB1538415-032	[16-Dec-2015]	AM-BH06 0.50-1.00			✓	✓
EB1538415-033	[16-Dec-2015]	AM-BH06 1.00-1.50	✓			
EB1538415-034	[16-Dec-2015]	AM-BH06 1.50-2.00	✓			
EB1538415-035	[16-Dec-2015]	AM-BH06 2.00-2.50	✓			

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS
EB1538415-036	[16-Dec-2015]	AM-BH06 2.50-3.00			✓	✓
EB1538415-037	[16-Dec-2015]	AM-BH07 0.00-0.25		✓		
EB1538415-038	[16-Dec-2015]	AM-BH07 0.50-0.75		✓		
EB1538415-039	[16-Dec-2015]	AM-BH07 0.75-1.00		✓		
EB1538415-040	[16-Dec-2015]	AM-BH07 1.00-1.25		✓		
EB1538415-041	[16-Dec-2015]	AM-BH07 1.25-1.50		✓		
EB1538415-042	[16-Dec-2015]	AM-BH07 1.50-1.75		✓		
EB1538415-043	[16-Dec-2015]	AM-BH07 1.75-2.00		✓		
EB1538415-044	[16-Dec-2015]	AM-BH07 2.00-2.25		✓		
EB1538415-045	[16-Dec-2015]	AM-BH07 2.25-2.50		✓		
EB1538415-046	[16-Dec-2015]	AM-BH07 2.50-2.75		✓		
EB1538415-047	[16-Dec-2015]	AM-BH07 2.75-3.00		✓		
EB1538415-048	[16-Dec-2015]	AM-BH07 0.00-0.50			✓	✓
EB1538415-049	[16-Dec-2015]	AM-BH07 1.00-1.50	✓			
EB1538415-050	[16-Dec-2015]	AM-BH07 1.50-2.00			✓	✓
EB1538415-051	[16-Dec-2015]	AM-BH07 2.00-2.50	✓			
EB1538415-052	[16-Dec-2015]	AM-BH07 2.50-3.00	✓			
EB1538415-053	[16-Dec-2015]	AM-BH08 0.00-0.25		✓		
EB1538415-054	[16-Dec-2015]	AM-BH08 0.25-0.50		✓		
EB1538415-055	[16-Dec-2015]	AM-BH08 0.50-0.75		✓		
EB1538415-056	[16-Dec-2015]	AM-BH08 0.75-1.00		✓		
EB1538415-057	[16-Dec-2015]	AM-BH08 1.00-1.25		✓		
EB1538415-058	[16-Dec-2015]	AM-BH08 1.25-1.50		✓		
EB1538415-059	[16-Dec-2015]	AM-BH08 1.50-1.75		✓		
EB1538415-060	[16-Dec-2015]	AM-BH08 1.75-2.00		✓		
EB1538415-061	[16-Dec-2015]	AM-BH08 2.00-2.25		✓		
EB1538415-062	[16-Dec-2015]	AM-BH08 2.25-2.50		✓		
EB1538415-063	[16-Dec-2015]	AM-BH08 2.50-2.75		✓		
EB1538415-064	[16-Dec-2015]	AM-BH08 2.75-3.00		✓		
EB1538415-065	[16-Dec-2015]	AM-BH08 0.00-0.50			✓	✓
EB1538415-066	[16-Dec-2015]	AM-BH08 0.50-1.00	✓			
EB1538415-067	[16-Dec-2015]	AM-BH08 1.00-1.50			✓	✓
EB1538415-068	[16-Dec-2015]	AM-BH08 1.50-2.00	✓			
EB1538415-069	[16-Dec-2015]	AM-BH08 2.00-2.50	✓			
EB1538415-070	[16-Dec-2015]	AM-BH08 2.50-3.00	✓			

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	kbiram@golder.com.au

TAMARA SICCAMA

- *AU Certificate of Analysis - NATA (COA)	Email	TSiccama@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	TSiccama@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	TSiccama@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	TSiccama@golder.com.au
- Chain of Custody (CoC) (COC)	Email	TSiccama@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	TSiccama@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	TSiccama@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	TSiccama@golder.com.au

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD** **FAX** **DISK** **EMAIL** **BULLETIN BOARD**		
Email Format:	**PDF** **Excel** **Other** **Email Add:** tsiccama@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystal-Rae Biram
Contact Phone: 07 37215400 **Email:** KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
1	AM-BH05	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
2	AM-BH05	0.25	0.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
3	AM-BH05	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
4	AM-BH05	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
5	AM-BH05	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
6	AM-BH05	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
7	AM-BH05	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
8	AM-BH05	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
9	AM-BH05	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
10	AM-BH05	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
11	AM-BH05	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
12	AM-BH05	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
13	AM-BH05	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
14	AM-BH05	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N				x	
15	AM-BH05	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
16	AM-BH05	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
17	AM-BH05	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
18	AM-BH05	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N				x	

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE = Core(CR)** **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		**Chilled**		**LAB. BATCH NUMBER**	
Suitable Containers		**Frozen**		**Bill to:**	
Cool Box		**Ambient**		**Address**	

SCANNED

Environmental Division
Brisbane
Work Order Reference
EB1538415

SPLIT BATCH
Test Split due to no. of samples
Assoc. Batch No.
EB1538408 & EB1538419.

Telephone : + 61-7-3243 7222

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD**	**FAX** **DISK**	**EMAIL** **BULLETIN BOARD**
Email Format:	**PDF**	**Excel** **Other**	**Email Addr** tsiccama@golder.com.au

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147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: **Krystal-Rae Biram**
Contact Phone: 07 37215400 **Email:** KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EF231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
19	AM-BH06	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
20	AM-BH06	0.25	0.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
21	AM-BH06	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
22	AM-BH06	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
23	AM-BH06	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
24	AM-BH06	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
25	AM-BH06	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
26	AM-BH06	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
27	AM-BH06	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
28	AM-BH06	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
29	AM-BH06	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
30	AM-BH06	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
31	AM-BH06	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
32	AM-BH06	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N				x	
33	AM-BH06	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
34	AM-BH06	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
35	AM-BH06	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
36	AM-BH06	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N				x	

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		**Chilled**		**LAB. BATCH NUMBER**	
Suitable Containers		**Frozen**		**Bill to:**	
Cool Box		**Ambient**		**Address**	

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD**	**FAX**	**DISK**	**EMAIL**	**BULLETIN BOARD**
Email Format:	**PDF**	**Excel**	**Other**	**Email Addr**	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
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Project Manager: Krystal-Rae Biram
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Comments/Special Instructions:

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ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
37	AM-BH07	0.00	0.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
	~~AM-BH07~~	~~0.25~~	~~0.50~~	~~Soil~~	~~17/12/2015~~		~~Bag~~	~~Frozen~~	~~1~~	~~N~~		~~x~~	~~x~~		
38	AM-BH07	0.50	0.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
39	AM-BH07	0.75	1.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
40	AM-BH07	1.00	1.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
41	AM-BH07	1.25	1.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
42	AM-BH07	1.50	1.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
43	AM-BH07	1.75	2.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
44	AM-BH07	2.00	2.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
45	AM-BH07	2.25	2.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
46	AM-BH07	2.50	2.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
47	AM-BH07	2.75	3.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
48	AM-BH07	0.00	0.50	Soil	17/12/2015		Jar	Chilled	1	N				x	
49	~~AM-BH07~~	~~0.50~~	~~1.00~~	~~Soil~~	~~17/12/2015~~		~~Jar~~	~~Chilled~~	~~1~~	~~N~~	~~x~~				
49	AM-BH07	1.00	1.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
50	AM-BH07	1.50	2.00	Soil	17/12/2015		Jar	Chilled	1	N				x	
51	AM-BH07	2.00	2.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
52	AM-BH07	2.50	3.00	Soil	17/12/2015		Jar	Chilled	1	N	x				

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE = Core(CR)** **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory **LAB. BATCH NUMBER**

Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days):	**5**	**BY:**	
Report Format:	**HARD**	**FAX** **DISK** **EMAIL** **BULLETIN BOARD**	
Email Format:	**PDF**	**Excel** **Other** **Email Add**	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: **Krystal-Rae Biram**
Contact Phone: **07 37215400** **Email:** KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: **N**
Samples taken from a known Weed and or Pest Area: **N**

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
53	AM-BH08	0.00	0.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
54	AM-BH08	0.25	0.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
55	AM-BH08	0.50	0.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
56	AM-BH08	0.75	1.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
57	AM-BH08	1.00	1.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
58	AM-BH08	1.25	1.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
59	AM-BH08	1.50	1.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
60	AM-BH08	1.75	2.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
61	AM-BH08	2.00	2.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
62	AM-BH08	2.25	2.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
63	AM-BH08	2.50	2.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
64	AM-BH08	2.75	3.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
66	AM-BH08	0.00	0.50	Soil	17/12/2015		Jar	Chilled	1	N				x	
67	AM-BH08	0.50	1.00	Soil	17/12/2015		Jar	Chilled	1	N	x				
68	AM-BH08	1.00	1.50	Soil	17/12/2015		Jar	Chilled	1	N				x	
69	AM-BH08	1.50	2.00	Soil	17/12/2015		Jar	Chilled	1	N	x				
70	AM-BH08	2.00	2.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
	AM-BH08	2.50	3.00	Soil	17/12/2015		Jar	Chilled	1	N	x				

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE = Core(CR)** **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory			**LAB. BATCH NUMBER**	
Security Seal		**Chilled**		**Bill to:**
Suitable Containers		**Frozen**		**Address**
Cool Box		**Ambient**		

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1538419**	Page	: 1 of 47
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015 16:00
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 06-Jan-2016 16:55
Site	: ----		
		No. of samples received	: 77
Quote number	: ----	No. of samples analysed	: 54

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD
Nanthini Coilparampi	Laboratory Manager - Inorganics	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- EG005T (Total Metals): Sample EB1538312-001 shows poor matrix spike recovery due to sample heterogeneity. Confirmed by visual inspection.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- PFOS and PFOA results are reported as an aggregate of linear and branched isomers.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 0.00-0.25	AM-BH09 0.25-0.50	AM-BH09 0.50-0.75	AM-BH09 0.75-1.00	AM-BH09 1.00-1.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-001	EB1538419-002	EB1538419-003	EB1538419-004	EB1538419-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	7.3	7.4	4.6	3.8	5.5
pH (Fox)	----	0.1	pH Unit	4.1	5.3	3.2	2.1	3.1
Reaction Rate	----	1	-	3	3	2	2	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 0.00-0.25	AM-BH09 0.25-0.50	AM-BH09 0.50-0.75	AM-BH09 0.75-1.00	AM-BH09 1.00-1.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-001	EB1538419-002	EB1538419-003	EB1538419-004	EB1538419-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 0.00-0.25	AM-BH09 0.25-0.50	AM-BH09 0.50-0.75	AM-BH09 0.75-1.00	AM-BH09 1.00-1.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-001	EB1538419-002	EB1538419-003	EB1538419-004	EB1538419-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 0.00-0.25	AM-BH09 0.25-0.50	AM-BH09 0.50-0.75	AM-BH09 0.75-1.00	AM-BH09 1.00-1.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-001	EB1538419-002	EB1538419-003	EB1538419-004	EB1538419-005
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 1.25-1.50	AM-BH09 1.50-1.75	AM-BH09 1.75-2.00	AM-BH09 2.00-2.25	AM-BH09 2.25-2.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-006	EB1538419-007	EB1538419-008	EB1538419-009	EB1538419-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.8	4.5	4.3	4.2	4.3
pH (Fox)	----	0.1	pH Unit	2.8	2.9	2.4	2.4	2.5
Reaction Rate	----	1	-	4	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 1.25-1.50	AM-BH09 1.50-1.75	AM-BH09 1.75-2.00	AM-BH09 2.00-2.25	AM-BH09 2.25-2.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-006	EB1538419-007	EB1538419-008	EB1538419-009	EB1538419-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 1.25-1.50	AM-BH09 1.50-1.75	AM-BH09 1.75-2.00	AM-BH09 2.00-2.25	AM-BH09 2.25-2.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-006	EB1538419-007	EB1538419-008	EB1538419-009	EB1538419-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 1.25-1.50	AM-BH09 1.50-1.75	AM-BH09 1.75-2.00	AM-BH09 2.00-2.25	AM-BH09 2.25-2.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-006	EB1538419-007	EB1538419-008	EB1538419-009	EB1538419-010
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 2.50-2.75	AM-BH09 2.75-3.00	AM-BH09 0.00-0.50	AM-BH09 0.50-1.00	AM-BH17 0.00-0.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-011	EB1538419-012	EB1538419-013	EB1538419-014	EB1538419-019
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	5.3	4.8	----	----	6.1
pH (Fox)	----	0.1	pH Unit	3.0	3.0	----	----	3.8
Reaction Rate	----	1	-	3	2	----	----	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	10.8	19.4	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 2.50-2.75	AM-BH09 2.75-3.00	AM-BH09 0.00-0.50	AM-BH09 0.50-1.00	AM-BH17 0.00-0.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-011	EB1538419-012	EB1538419-013	EB1538419-014	EB1538419-019
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 2.50-2.75	AM-BH09 2.75-3.00	AM-BH09 0.00-0.50	AM-BH09 0.50-1.00	AM-BH17 0.00-0.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-011	EB1538419-012	EB1538419-013	EB1538419-014	EB1538419-019
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
PFOA	335-67-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	<0.005	<0.005	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	<0.001	<0.001	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	<0.001	<0.001	----
PFBS	375-73-5	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFNA	375-95-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 2.50-2.75	AM-BH09 2.75-3.00	AM-BH09 0.00-0.50	AM-BH09 0.50-1.00	AM-BH17 0.00-0.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-011	EB1538419-012	EB1538419-013	EB1538419-014	EB1538419-019
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTeA	376-06-7	0.001	mg/kg	----	----	<0.001	<0.001	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 0.25-0.50	AM-BH17 0.50-0.75	AM-BH17 0.75-1.00	AM-BH17 1.00-1.25	AM-BH17 1.25-1.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-020	EB1538419-021	EB1538419-022	EB1538419-023	EB1538419-024
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	5.8	7.9	8.0	8.1	8.5
pH (Fox)	----	0.1	pH Unit	3.4	6.0	2.6	4.0	1.7
Reaction Rate	----	1	-	2	3	4	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 0.25-0.50	AM-BH17 0.50-0.75	AM-BH17 0.75-1.00	AM-BH17 1.00-1.25	AM-BH17 1.25-1.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-020	EB1538419-021	EB1538419-022	EB1538419-023	EB1538419-024
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 0.25-0.50	AM-BH17 0.50-0.75	AM-BH17 0.75-1.00	AM-BH17 1.00-1.25	AM-BH17 1.25-1.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-020	EB1538419-021	EB1538419-022	EB1538419-023	EB1538419-024
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 0.25-0.50	AM-BH17 0.50-0.75	AM-BH17 0.75-1.00	AM-BH17 1.00-1.25	AM-BH17 1.25-1.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-020	EB1538419-021	EB1538419-022	EB1538419-023	EB1538419-024
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 1.50-1.75	AM-BH17 1.75-2.00	AM-BH17 2.00-2.25	AM-BH17 2.25-2.50	AM-BH17 2.50-2.75
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-025	EB1538419-026	EB1538419-027	EB1538419-028	EB1538419-029
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.3	8.3	8.3	8.4	8.4
pH (Fox)	----	0.1	pH Unit	2.0	1.8	1.5	1.6	1.7
Reaction Rate	----	1	-	4	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 1.50-1.75	AM-BH17 1.75-2.00	AM-BH17 2.00-2.25	AM-BH17 2.25-2.50	AM-BH17 2.50-2.75
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-025	EB1538419-026	EB1538419-027	EB1538419-028	EB1538419-029
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 1.50-1.75	AM-BH17 1.75-2.00	AM-BH17 2.00-2.25	AM-BH17 2.25-2.50	AM-BH17 2.50-2.75
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-025	EB1538419-026	EB1538419-027	EB1538419-028	EB1538419-029
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 1.50-1.75	AM-BH17 1.75-2.00	AM-BH17 2.00-2.25	AM-BH17 2.25-2.50	AM-BH17 2.50-2.75
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-025	EB1538419-026	EB1538419-027	EB1538419-028	EB1538419-029
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 2.75-3.00	AM-BH17 0.00-0.50	AM-BH17 1.00-1.50	AM-BH19 0.00-0.25	AM-BH19 0.25-0.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-030	EB1538419-031	EB1538419-033	EB1538419-038	EB1538419-039
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.5	----	----	7.4	5.0
pH (Fox)	----	0.1	pH Unit	1.7	----	----	3.6	2.4
Reaction Rate	----	1	-	4	----	----	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	15.8	54.2	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 2.75-3.00	AM-BH17 0.00-0.50	AM-BH17 1.00-1.50	AM-BH19 0.00-0.25	AM-BH19 0.25-0.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-030	EB1538419-031	EB1538419-033	EB1538419-038	EB1538419-039
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 2.75-3.00	AM-BH17 0.00-0.50	AM-BH17 1.00-1.50	AM-BH19 0.00-0.25	AM-BH19 0.25-0.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-030	EB1538419-031	EB1538419-033	EB1538419-038	EB1538419-039
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	<0.0005	<0.0005	----	----
PFOA	335-67-1	0.0005	mg/kg	----	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	<0.005	<0.005	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	<0.001	<0.001	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	<0.001	<0.001	----	----
PFBS	375-73-5	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFNA	375-95-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 2.75-3.00	AM-BH17 0.00-0.50	AM-BH17 1.00-1.50	AM-BH19 0.00-0.25	AM-BH19 0.25-0.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-030	EB1538419-031	EB1538419-033	EB1538419-038	EB1538419-039
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFTeA	376-06-7	0.001	mg/kg	----	<0.001	<0.001	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.50-0.75	AM-BH19 0.75-1.00	AM-BH19 1.00-1.25	AM-BH19 1.25-1.50	AM-BH19 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-040	EB1538419-041	EB1538419-042	EB1538419-043	EB1538419-044
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.5	4.4	4.3	6.0	6.3
pH (Fox)	----	0.1	pH Unit	1.9	2.7	2.5	2.5	2.6
Reaction Rate	----	1	-	3	3	2	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.50-0.75	AM-BH19 0.75-1.00	AM-BH19 1.00-1.25	AM-BH19 1.25-1.50	AM-BH19 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-040	EB1538419-041	EB1538419-042	EB1538419-043	EB1538419-044
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.50-0.75	AM-BH19 0.75-1.00	AM-BH19 1.00-1.25	AM-BH19 1.25-1.50	AM-BH19 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-040	EB1538419-041	EB1538419-042	EB1538419-043	EB1538419-044
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.50-0.75	AM-BH19 0.75-1.00	AM-BH19 1.00-1.25	AM-BH19 1.25-1.50	AM-BH19 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-040	EB1538419-041	EB1538419-042	EB1538419-043	EB1538419-044
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 1.75-2.00	AM-BH19 2.00-2.25	AM-BH19 2.25-2.50	AM-BH19 2.50-2.75	AM-BH19 2.75-3.00
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-045	EB1538419-046	EB1538419-047	EB1538419-048	EB1538419-049
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.4	6.4	6.5	6.2	6.1
pH (Fox)	----	0.1	pH Unit	3.5	3.7	4.0	2.0	2.0
Reaction Rate	----	1	-	3	3	3	4	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 1.75-2.00	AM-BH19 2.00-2.25	AM-BH19 2.25-2.50	AM-BH19 2.50-2.75	AM-BH19 2.75-3.00
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-045	EB1538419-046	EB1538419-047	EB1538419-048	EB1538419-049
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 1.75-2.00	AM-BH19 2.00-2.25	AM-BH19 2.25-2.50	AM-BH19 2.50-2.75	AM-BH19 2.75-3.00
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-045	EB1538419-046	EB1538419-047	EB1538419-048	EB1538419-049
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 1.75-2.00	AM-BH19 2.00-2.25	AM-BH19 2.25-2.50	AM-BH19 2.50-2.75	AM-BH19 2.75-3.00
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-045	EB1538419-046	EB1538419-047	EB1538419-048	EB1538419-049
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.00-0.50	AM-BH19 1.50-2.00	AM-BH20 0.00-0.50	AM-BH21 0.50-1.00	AM-BH22 1.00-1.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-050	EB1538419-053	EB1538419-056	EB1538419-057	EB1538419-058
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	----	----	----	----
pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	32.7	26.9	31.6	24.5	39.8
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	25	11	20
Cadmium	7440-43-9	1	mg/kg	----	----	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	----	30	54	58
Copper	7440-50-8	5	mg/kg	----	----	30	12	19
Lead	7439-92-1	5	mg/kg	----	----	35	7	42
Nickel	7440-02-0	2	mg/kg	----	----	38	7	14
Zinc	7440-66-6	5	mg/kg	----	----	90	25	35
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.00-0.50	AM-BH19 1.50-2.00	AM-BH20 0.00-0.50	AM-BH21 0.50-1.00	AM-BH22 1.00-1.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-050	EB1538419-053	EB1538419-056	EB1538419-057	EB1538419-058
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	**120**	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	**120**	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	<50	<50
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	<50	<50
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.00-0.50	AM-BH19 1.50-2.00	AM-BH20 0.00-0.50	AM-BH21 0.50-1.00	AM-BH22 1.00-1.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-050	EB1538419-053	EB1538419-056	EB1538419-057	EB1538419-058
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	<10	<10
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	<10	<10
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	----	----	<1	<1	<1
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	<0.001	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	----	----	----
PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.00-0.50	AM-BH19 1.50-2.00	AM-BH20 0.00-0.50	AM-BH21 0.50-1.00	AM-BH22 1.00-1.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-050	EB1538419-053	EB1538419-056	EB1538419-057	EB1538419-058
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	67.2	87.8	66.1
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	60.1	72.7	56.6
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	101	99.7	94.3
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	99.7	101	93.0
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	69.2	59.5	57.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	104	101	102
Anthracene-d10	1719-06-8	0.5	%	----	----	95.9	91.7	90.9
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	101	107	104
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	93.3	103	81.5
Toluene-D8	2037-26-5	0.2	%	----	----	75.4	103	77.0
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	71.2	86.3	68.0

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH23 0.50-1.00	AM-BH28 0.00-0.25	AM-BH28 0.25-0.50	AM-BH28 0.50-0.75	AM-BH28 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-059	EB1538419-060	EB1538419-061	EB1538419-062	EB1538419-063
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	4.9	4.8	5.4	6.9
pH (Fox)	----	0.1	pH Unit	----	3.0	2.8	1.7	1.5
Reaction Rate	----	1	-	----	3	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	26.8	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	14	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	30	----	----	----	----
Copper	7440-50-8	5	mg/kg	8	----	----	----	----
Lead	7439-92-1	5	mg/kg	13	----	----	----	----
Nickel	7440-02-0	2	mg/kg	6	----	----	----	----
Zinc	7440-66-6	5	mg/kg	24	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH23 0.50-1.00	AM-BH28 0.00-0.25	AM-BH28 0.25-0.50	AM-BH28 0.50-0.75	AM-BH28 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-059	EB1538419-060	EB1538419-061	EB1538419-062	EB1538419-063
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH23 0.50-1.00	AM-BH28 0.00-0.25	AM-BH28 0.25-0.50	AM-BH28 0.50-0.75	AM-BH28 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-059	EB1538419-060	EB1538419-061	EB1538419-062	EB1538419-063
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH23 0.50-1.00	AM-BH28 0.00-0.25	AM-BH28 0.25-0.50	AM-BH28 0.50-0.75	AM-BH28 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-059	EB1538419-060	EB1538419-061	EB1538419-062	EB1538419-063
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	81.4	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	66.3	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	96.2	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	98.9	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	55.8	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	103	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	87.5	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	104	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	72.4	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	68.4	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	75.2	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH28 2.50-2.75	AM-BH28 2.75-3.00	AM-BH28 0.00-0.50	AM-BH28 2.50-3.00	----
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	----
Compound	CAS Number	LOR	Unit	EB1538419-064	EB1538419-065	EB1538419-066	EB1538419-069	--------
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.6	7.3	----	----	----
pH (Fox)	----	0.1	pH Unit	2.0	2.1	----	----	----
Reaction Rate	----	1	-	4	4	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	15.0	36.6	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH28 2.50-2.75	AM-BH28 2.75-3.00	AM-BH28 0.00-0.50	AM-BH28 2.50-3.00	----
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	----
Compound	CAS Number	LOR	Unit	EB1538419-064	EB1538419-065	EB1538419-066	EB1538419-069	--------
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH28 2.50-2.75	AM-BH28 2.75-3.00	AM-BH28 0.00-0.50	AM-BH28 2.50-3.00	----
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	----
Compound	CAS Number	LOR	Unit	EB1538419-064	EB1538419-065	EB1538419-066	EB1538419-069	--------
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
PFOA	335-67-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	<0.005	<0.005	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	<0.001	<0.001	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	<0.001	<0.001	----
PFBS	375-73-5	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFNA	375-95-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH28 2.50-2.75	AM-BH28 2.75-3.00	AM-BH28 0.00-0.50	AM-BH28 2.50-3.00	----
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	----
Compound	CAS Number	LOR	Unit	EB1538419-064	EB1538419-065	EB1538419-066	EB1538419-069	--------
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTeA	376-06-7	0.001	mg/kg	----	----	<0.001	<0.001	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1538419**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 06-Jan-2016
Site	: ----	No. of samples received	: 77
Quote number	: ----	No. of samples analysed	: 54

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
		Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD
Nanthini Coilparampi	Laboratory Manager - Inorganics	Sydney Inorganics, Smithfield, NSW

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA037: Ass Field Screening Analysis (QC Lot: 318595)									
EB1538419-001	AM-BH09 0.00-0.25	EA037: pH (F)	----	0.1	pH Unit	7.3	7.2	1.38	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.1	4.2	2.41	0% - 20%
EB1538419-011	AM-BH09 2.50-2.75	EA037: pH (F)	----	0.1	pH Unit	5.3	5.4	1.87	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.0	3.0	0.00	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 318596)									
EB1538419-027	AM-BH17 2.00-2.25	EA037: pH (F)	----	0.1	pH Unit	8.3	8.4	1.20	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	1.5	1.6	6.45	0% - 50%
EB1538419-044	AM-BH19 1.50-1.75	EA037: pH (F)	----	0.1	pH Unit	6.3	6.4	1.57	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.6	2.5	3.92	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 318597)									
EB1538419-064	AM-BH28 2.50-2.75	EA037: pH (F)	----	0.1	pH Unit	6.6	6.5	1.53	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.0	1.9	5.13	0% - 20%
EA055: Moisture Content (QC Lot: 319294)									
EB1538235-006	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	15.1	14.1	6.52	0% - 50%
EB1538472-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	45.7	51.2	11.3	0% - 20%
EA055: Moisture Content (QC Lot: 319729)									
EB1538419-013	AM-BH09 0.00-0.50	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.8	9.5	13.0	0% - 50%
EB1538478-025	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	19.4	19.6	1.13	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 319210)									
EB1538312-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	4	4	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	11	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	5	37.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	69	71	2.72	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	78	80	2.88	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	522	539	3.21	0% - 20%
EB1538596-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	5	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	13	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	41	42	3.58	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	104	108	3.44	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 319209)									
EB1538301-022	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 319209) - continued									
EB1538596-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 319065)									
EB1538419-056	AM-BH20 0.00-0.50	EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EB1538142-002	Anonymous	EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 319065) - continued									
EB1538142-002	Anonymous	EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 319066)									
EB1538419-056	AM-BH20 0.00-0.50	EP071SG-S: C10 - C14 Fraction	----	25	mg/kg	<50	<50	0.00	No Limit
		EP071SG-S: C15 - C28 Fraction	----	50	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	50	mg/kg	<100	110	11.2	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 319066)									
EB1538419-056	AM-BH20 0.00-0.50	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	120	140	17.6	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 319064)									
EB1538142-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 318903)									
EB1538419-056	AM-BH20 0.00-0.50	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 318903)									
EB1538419-056	AM-BH20 0.00-0.50	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 318903)									
EB1538419-056	AM-BH20 0.00-0.50	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 318903) - continued									
EB1538419-056	AM-BH20 0.00-0.50	EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319989)									
EB1538415-036	Anonymous	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1538408-013	Anonymous	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319990)									
EB1538415-036	Anonymous	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231: Perfluorinated Compounds (QC Lot: 319990) - continued									
EB1538415-036	Anonymous	EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
EB1538408-013	Anonymous	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319991)									
EB1538419-053	AM-BH19 1.50-2.00	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319992)									
EB1538419-053	AM-BH19 1.50-2.00	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 319210)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	102	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.43 mg/kg	100	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	103	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	107	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	105	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	96.3	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	110	87	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 319209)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	88.9	78	122
EP068A: Organochlorine Pesticides (OC) (QCLot: 319065)								
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	111	60	123
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	108	62	121
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	105	80	142
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	103	70	130
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	104	54	121
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	107	51	125
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	109	49	121
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	109	61	122
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	114	57	118
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	61	122
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	106	67	129
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	112	55	125
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	104	60	137
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	108	52	125
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	115	55	129
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	55	129
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	115	65	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	114	58	118
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	# 120	54	112
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	95.5	53	136
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	117	56	119
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 319066)								
EP071SG-S: C10 - C14 Fraction	----	25	mg/kg	<20	318 mg/kg	79.6	47	112
EP071SG-S: C15 - C28 Fraction	----	50	mg/kg	<50	531 mg/kg	86.6	55	108

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 319066) - continued								
EP071SG-S: C29 - C36 Fraction	----	50	mg/kg	<50	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 319066)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	82.9	46	115
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	85.7	53	113
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 319064)								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	98.9	83	121
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	84.0	74	118
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	106	72	115
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	68.6	64	120
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	77.4	76	121
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	87.8	59	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	100	64	131
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	90.0	70	129
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	98.2	66	119
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	86.2	45	134
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	97.2	70	116
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	95.0	81	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	86.8	53	135
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	93.8	74	119
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	102	72	117
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	100	70	134
EP080/071: Total Petroleum Hydrocarbons (QCLot: 318903)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	103	66	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 318903)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	102	66	119
EP080: BTEXN (QCLot: 318903)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	94.6	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	76.2	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	82.2	66	106
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	85.4	72	115
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	81.6	68	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	83.3	73	105
EP231: Perfluorinated Compounds (QCLot: 319989)								
EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	0.00625 mg/kg	82.6	50	130
EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	0.00625 mg/kg	73.0	30	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231: Perfluorinated Compounds (QCLot: 319989) - continued								
EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	0.00625 mg/kg	110	50	130
EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	0.00625 mg/kg	118	30	130
EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.5	50	130
EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	50	130
EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.7	50	130
EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.9	50	130
EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	50	130
EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	36	130
EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	50	130
EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.3	50	130
EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	0.00625 mg/kg	73.7	30	130
EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.6	30	130
EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)								
EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	0.00625 mg/kg	122	56	138
EP231: 8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.8	54	134
EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	54	146
EP231: Perfluorinated Compounds (QCLot: 319991)								
EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	0.00625 mg/kg	87.8	50	130
EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	0.00625 mg/kg	87.5	30	130
EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	0.00625 mg/kg	100	50	130
EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	0.00625 mg/kg	113	30	130
EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.2	50	130
EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.0	50	130
EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.7	50	130
EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.3	50	130
EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.7	50	130
EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.1	36	130
EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.9	50	130
EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	50	130
EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	53.2	50	130
EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	0.00625 mg/kg	88.8	30	130
EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.2	30	130
EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231: Perfluorinated Compounds (QCLot: 319992)								
EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	0.00625 mg/kg	105	56	138

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231: Perfluorinated Compounds (QCLot: 319992) - continued								
EP231: 8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	108	54	134
EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	94.6	54	146

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 319210)							
EB1538312-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	93.5	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	88.5	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	# 58.8	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	# Not Determined	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	83.4	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	77.7	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 319209)							
EB1538301-024	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	78.8	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 319065)							
EB1538142-007	Anonymous	EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	106	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	100	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	104	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	83.6	70	130
		EP068: gamma-BHC	58-89-9	0.5 mg/kg	102	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	108	70	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 319066)							
EB1538419-057	AM-BH21 0.50-1.00	EP071SG-S: C10 - C14 Fraction	----	318 mg/kg	92.4	47	130
		EP071SG-S: C15 - C28 Fraction	----	531 mg/kg	100	55	130
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 319066)							
EB1538419-057	AM-BH21 0.50-1.00	EP071SG-S: >C10 - C16 Fraction	----	428 mg/kg	97.1	46	130
		EP071SG-S: >C16 - C34 Fraction	----	395 mg/kg	97.4	53	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 319064)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 319064) - continued							
EB1538142-007	Anonymous	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	95.8	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	96.2	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 318903)							
EB1538419-057	AM-BH21 0.50-1.00	EP080: C6 - C9 Fraction	----	8 mg/kg	80.6	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 318903)							
EB1538419-057	AM-BH21 0.50-1.00	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	80.7	70	130
EP080: BTEXN (QCLot: 318903)							
EB1538419-057	AM-BH21 0.50-1.00	EP080: Benzene	71-43-2	2 mg/kg	84.6	70	130
		EP080: Toluene	108-88-3	2 mg/kg	85.1	70	130
EP231: Perfluorinated Compounds (QCLot: 319989)							
EB1538408-013	Anonymous	EP231-PFC: N-Et-FOSA	4151-50-2	0.00625 mg/kg	116	50	130
		EP231-PFC: N-Et-FOSE	1691-99-2	0.00625 mg/kg	114	30	130
		EP231-PFC: N-Me-FOSA	31506-32-8	0.00625 mg/kg	127	50	130
		EP231-PFC: N-Me-FOSE	2448-09-7	0.00625 mg/kg	106	30	130
		EP231-PFC: PFBS	375-73-5	0.00125 mg/kg	103	50	130
		EP231-PFC: PFDcA	335-76-2	0.00125 mg/kg	69.2	50	130
		EP231-PFC: PFDcS	67906-42-7	0.00125 mg/kg	67.7	50	130
		EP231-PFC: PFDoA	307-55-1	0.00125 mg/kg	113	50	130
		EP231-PFC: PFHpA	375-85-9	0.00125 mg/kg	101	50	130
		EP231-PFC: PFHxA	307-24-4	0.00125 mg/kg	79.3	30	130
		EP231-PFC: PFHxS	355-46-4	0.00125 mg/kg	106	50	130
		EP231-PFC: PFNA	375-95-1	0.00125 mg/kg	81.3	50	130
		EP231-PFC: PFOSA	754-91-6	0.00125 mg/kg	71.7	50	130
		EP231-PFC: PFTeA	376-06-7	0.00625 mg/kg	65.5	30	130
		EP231-PFC: PFTriA	72629-94-8	0.00125 mg/kg	114	30	130
		EP231-PFC: PFUnA	2058-94-8	0.00125 mg/kg	123	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)							
EB1538408-013	Anonymous	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.00625 mg/kg	131	56	138
		EP231: PFOA	335-67-1	0.00125 mg/kg	100	54	134
		EP231: PFOS	1763-23-1	0.00125 mg/kg	107	54	146
EP231: Perfluorinated Compounds (QCLot: 319991)							
EB1538419-053	AM-BH19 1.50-2.00	EP231-PFC: N-Et-FOSA	4151-50-2	0.00625 mg/kg	95.5	50	130
		EP231-PFC: N-Et-FOSE	1691-99-2	0.00625 mg/kg	92.6	30	130
		EP231-PFC: N-Me-FOSA	31506-32-8	0.00625 mg/kg	86.3	50	130
		EP231-PFC: N-Me-FOSE	2448-09-7	0.00625 mg/kg	124	30	130
		EP231-PFC: PFBS	375-73-5	0.00125 mg/kg	72.4	50	130
		EP231-PFC: PFDcA	335-76-2	0.00125 mg/kg	96.8	50	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231: Perfluorinated Compounds (QCLot: 319991) - continued							
EB1538419-053	AM-BH19 1.50-2.00	EP231-PFC: PFDcS	67906-42-7	0.00125 mg/kg	70.7	50	130
		EP231-PFC: PFDoA	307-55-1	0.00125 mg/kg	80.4	50	130
		EP231-PFC: PFHpA	375-85-9	0.00125 mg/kg	74.3	50	130
		EP231-PFC: PFHxA	307-24-4	0.00125 mg/kg	80.1	30	130
		EP231-PFC: PFHxS	355-46-4	0.00125 mg/kg	95.8	50	130
		EP231-PFC: PFNA	375-95-1	0.00125 mg/kg	115	50	130
		EP231-PFC: PFOSA	754-91-6	0.00125 mg/kg	51.2	50	130
		EP231-PFC: PFTeA	376-06-7	0.00625 mg/kg	97.9	30	130
		EP231-PFC: PFTriA	72629-94-8	0.00125 mg/kg	73.4	30	130
		EP231-PFC: PFUnA	2058-94-8	0.00125 mg/kg	91.1	50	130
EP231: Perfluorinated Compounds (QCLot: 319992)							
EB1538419-053	AM-BH19 1.50-2.00	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.00625 mg/kg	123	56	138
		EP231: PFOA	335-67-1	0.00125 mg/kg	90.4	54	134
		EP231: PFOS	1763-23-1	0.00125 mg/kg	94.0	54	146

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1538419**	Page	: 1 of 7
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61-7-3243 7222
Project	: 1538021	Date Samples Received	: 18-Dec-2015
Site	: ----	Issue Date	: 06-Jan-2016
Sampler	: TAMARA SICCAMA	No. of samples received	: 77
Order number	: 1538021	No. of samples analysed	: 54

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	QC-319065-002	----	**Hexachlorobenzene (HCB)**	118-74-1	120 %	54-112%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB1538312--001	Anonymous	**Chromium**	7440-47-3	58.8 %	70-130%	**Recovery less than lower data quality objective**
EG005T: Total Metals by ICP-AES	EB1538312--001	Anonymous	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH09 0.00-0.25,	AM-BH09 0.25-0.50,	**17-Dec-2015**	**31-Dec-2015**	14-Jun-2016	✓	**31-Dec-2015**	14-Jun-2016	✓
AM-BH09 0.50-0.75,	AM-BH09 0.75-1.00,							
AM-BH09 1.00-1.25,	AM-BH09 1.25-1.50,							
AM-BH09 1.50-1.75,	AM-BH09 1.75-2.00,							
AM-BH09 2.00-2.25,	AM-BH09 2.25-2.50,							
AM-BH09 2.50-2.75,	AM-BH09 2.75-3.00,							
AM-BH19 0.00-0.25,	AM-BH19 0.25-0.50,							
AM-BH19 0.50-0.75,	AM-BH19 0.75-1.00,							
AM-BH19 1.00-1.25,	AM-BH19 1.25-1.50,							
AM-BH19 1.50-1.75,	AM-BH19 1.75-2.00,							
AM-BH19 2.00-2.25,	AM-BH19 2.25-2.50,							
AM-BH19 2.50-2.75,	AM-BH19 2.75-3.00							
Snap Lock Bag - frozen (EA037)								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis - Continued								
AM-BH17 0.00-0.25, AM-BH17 0.50-0.75, AM-BH17 1.00-1.25, AM-BH17 1.50-1.75, AM-BH17 2.00-2.25, AM-BH17 2.50-2.75, AM-BH28 0.00-0.25, AM-BH28 0.50-0.75, AM-BH28 2.50-2.75,	AM-BH17 0.25-0.50, AM-BH17 0.75-1.00, AM-BH17 1.25-1.50, AM-BH17 1.75-2.00, AM-BH17 2.25-2.50, AM-BH17 2.75-3.00, AM-BH28 0.25-0.50, AM-BH28 1.50-1.75, AM-BH28 2.75-3.00	**18-Dec-2015**	**31-Dec-2015**	15-Jun-2016	✓	**31-Dec-2015**	15-Jun-2016	✓
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH09 0.00-0.50, AM-BH19 0.00-0.50, AM-BH20 0.00-0.50, AM-BH22 1.00-1.50,	AM-BH09 0.50-1.00, AM-BH19 1.50-2.00, AM-BH21 0.50-1.00, AM-BH23 0.50-1.00	**17-Dec-2015**	**----**	----	----	**23-Dec-2015**	31-Dec-2015	✓
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH17 0.00-0.50, AM-BH28 0.00-0.50,	AM-BH17 1.00-1.50, AM-BH28 2.50-3.00	**18-Dec-2015**	**----**	----	----	**23-Dec-2015**	01-Jan-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH20 0.00-0.50, AM-BH22 1.00-1.50,	AM-BH21 0.50-1.00, AM-BH23 0.50-1.00	**17-Dec-2015**	**24-Dec-2015**	14-Jun-2016	✓	**24-Dec-2015**	14-Jun-2016	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH20 0.00-0.50, AM-BH22 1.00-1.50,	AM-BH21 0.50-1.00, AM-BH23 0.50-1.00	**17-Dec-2015**	**24-Dec-2015**	14-Jan-2016	✓	**29-Dec-2015**	14-Jan-2016	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
AM-BH20 0.00-0.50, AM-BH22 1.00-1.50,	AM-BH21 0.50-1.00, AM-BH23 0.50-1.00	**17-Dec-2015**	**23-Dec-2015**	31-Dec-2015	✓	**29-Dec-2015**	01-Feb-2016	✓
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH20 0.00-0.50, AM-BH22 1.00-1.50,	AM-BH21 0.50-1.00, AM-BH23 0.50-1.00	**17-Dec-2015**	**23-Dec-2015**	31-Dec-2015	✓	**30-Dec-2015**	01-Feb-2016	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH20 0.00-0.50, AM-BH22 1.00-1.50,	AM-BH21 0.50-1.00, AM-BH23 0.50-1.00	**17-Dec-2015**	**23-Dec-2015**	31-Dec-2015	✓	**29-Dec-2015**	01-Feb-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH20 0.00-0.50,	AM-BH21 0.50-1.00,	**17-Dec-2015**	**23-Dec-2015**	31-Dec-2015	✓	**29-Dec-2015**	31-Dec-2015	✓
AM-BH22 1.00-1.50,	AM-BH23 0.50-1.00							
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231)								
AM-BH09 0.00-0.50,	AM-BH09 0.50-1.00,	**17-Dec-2015**	**24-Dec-2015**	14-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH19 0.00-0.50,	AM-BH19 1.50-2.00							
Soil Glass Jar - Unpreserved (EP231)								
AM-BH17 0.00-0.50,	AM-BH17 1.00-1.50,	**18-Dec-2015**	**24-Dec-2015**	15-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH28 0.00-0.50,	AM-BH28 2.50-3.00							
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231-PFC)								
AM-BH09 0.00-0.50,	AM-BH09 0.50-1.00,	**17-Dec-2015**	**24-Dec-2015**	14-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH19 0.00-0.50,	AM-BH19 1.50-2.00							
Soil Glass Jar - Unpreserved (EP231-PFC)								
AM-BH17 0.00-0.50,	AM-BH17 1.00-1.50,	**18-Dec-2015**	**24-Dec-2015**	15-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH28 0.00-0.50,	AM-BH28 2.50-3.00							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	5	42	11.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
TRH Volatiles/BTEX	EP080	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	SOIL	In-House. A portion of soil is soaked in sodium hydroxide followed by extraction with methanol. The extract is neutralised with HCl and an aliquot taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.
Perfluorinated Compounds by LCMSMS	EP231-PFC	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In House
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	HARD	FAX	DISK	EMAIL	BULLETIN BOARD
Email Format:	PDF	Excel	Other	Email Addı	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystal-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
1	AM-BH09	0.00	0.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
2	AM-BH09	0.25	0.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
3	AM-BH09	0.50	0.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
4	AM-BH09	0.75	1.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
5	AM-BH09	1.00	1.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
6	AM-BH09	1.25	1.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
7	AM-BH09	1.50	1.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
8	AM-BH09	1.75	2.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
9	AM-BH09	2.00	2.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
10	AM-BH09	2.25	2.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
11	AM-BH09	2.50	2.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
12	AM-BH09	2.75	3.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
13	AM-BH09	0.00	0.50	Soil	17/12/2015		Jar	Chilled	1	N				x	
14	AM-BH09	0.50	1.00	Soil	17/12/2015		Jar	Chilled	1	N				x	
15	AM-BH09	1.00	1.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
16	AM-BH09	1.50	2.00	Soil	17/12/2015		Jar	Chilled	1	N	x				
17	AM-BH09	2.00	2.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
18	AM-BH09	2.50	3.00	Soil	17/12/2015		Jar	Chilled	1	N	x				

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other
SAMPLE TYPE = Core(CR)
HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list
Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory
Security Seal | **Chilled** | **LAB. BATCH NUMBER** | **Bill to:**
Suitable Containers | **Frozen** | **Address**
Cool Box | **Ambient**

SCANNED

Environmental Division
Brisbane
Work Order Reference
EB1538419

SPLIT BATCH
Test Split due to no. of samples
Assoc. Batch No.
EB1538408 & EB1538415

Telephone : + 61-7-3243 7222

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD** **FAX** **DISK** **EMAIL** **BULLETIN BOARD**		
Email Format:	**PDF** **Excel** **Other** **Email Addr** tsiccama@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: **Krystal-Rae Biram**
Contact Phone: **07 37215400** **Email:** KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
19	AM-BH17	0.00	0.25	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
20	AM-BH17	0.25	0.50	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
21	AM-BH17	0.50	0.75	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
22	AM-BH17	0.75	1.00	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
23	AM-BH17	1.00	1.25	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
24	AM-BH17	1.25	1.50	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
25	AM-BH17	1.50	1.75	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
26	AM-BH17	1.75	2.00	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
27	AM-BH17	2.00	2.25	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
28	AM-BH17	2.25	2.50	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
29	AM-BH17	2.50	2.75	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
30	AM-BH17	2.75	3.00	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
31	AM-BH17	0.00	0.50	Soil	18/12/2015		Jar	Chilled	1	N	x			x	
32	AM-BH17	0.50	1.00	Soil	18/12/2015		Jar	Chilled	1	N	x				
33	AM-BH17	1.00	1.50	Soil	18/12/2015		Jar	Chilled	1	N				x	
34	AM-BH17	1.50	2.00	Soil	18/12/2015		Jar	Chilled	1	N	x				
35	AM-BH17	2.00	2.50	Soil	18/12/2015		Jar	Chilled	1	N	x				
36	AM-BH17	2.50	3.00	Soil	18/12/2015		Jar	Chilled	1	N	x				
37	QC1				18/12/2015										

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	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory				**LAB. BATCH NUMBER**	
Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD**	**FAX** **DISK** **EMAIL** **BULLETIN BOARD**	
Email Format:	**PDF**	**Excel** **Other** **Email Addr**	tsiccama@golder.com.au

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ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
38	AM-BH19	0.00	0.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
39	AM-BH19	0.25	0.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
40	AM-BH19	0.50	0.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
41	AM-BH19	0.75	1.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
42	AM-BH19	1.00	1.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
43	AM-BH19	1.25	1.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
44	AM-BH19	1.50	1.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
45	AM-BH19	1.75	2.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
46	AM-BH19	2.00	2.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
47	AM-BH19	2.25	2.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
48	AM-BH19	2.50	2.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
49	AM-BH19	2.75	3.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
50	AM-BH19	0.00	0.50	Soil	17/12/2015		Jar	Chilled	1	N				x	
51	AM-BH19	0.50	1.00	Soil	17/12/2015		Jar	Chilled	1	N	x				
52	AM-BH19	1.00	1.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
53	AM-BH19	1.50	2.00	Soil	17/12/2015		Jar	Chilled	1	N				x	
54	AM-BH19	2.00	2.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
55	AM-BH19	2.50	3.00	Soil	17/12/2015		Jar	Chilled	1	N	x				

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	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		**Chilled**	**LAB. BATCH NUMBER**		
Suitable Containers		**Frozen**		**Bill to:**	
Cool Box		**Ambient**		**Address**	

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days):	**5**	**BY:**	

Report Format: HARD FAX DISK EMAIL BULLETIN BOARD

Email Format: PDF Excel Other Email Add: tsiccama@golder.com.au

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Project Manager: Krystal-Rae Biram

Contact Phone: 07 37215400 **Email:** KBiram@golder.com.au

Comments/Special Instructions:

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ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD			EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-7SG (TRH/BTEXN/PAH) - with silica gel clean up	Organochlorine pesticides	S2 - 8 Heavy Metals											
56	AM-BH20	0.00	0.50	Soil	17/12/2015		Jar	Chilled	1	N					x	x	x											
57	AM-BH21	0.50	1.00	Soil	17/12/2015		Jar	Chilled	1	N					x	x	x											
58	AM-BH22	1.00	1.50	Soil	17/12/2015		Jar	Chilled	1	N					x	x	x											
59	AM-BH23	0.50	1.00	Soil	17/12/2015		jar	Chilled	1	N					x	x	x											

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	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		**Chilled**		**LAB. BATCH NUMBER**	
Suitable Containers		**Frozen**		**Bill to:**	
Cool Box		**Ambient**		**Address**	

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1538419**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 4
Order number	: 1538021	Quote number	: EM2015GOLASS0592 (EN-002-15)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: TAMARA SICCAMA		

Dates

Date Samples Received	: 18-Dec-2015 4:00 PM	Issue Date	: 22-Dec-2015
Client Requested Due Date	: 04-Jan-2016	Scheduled Reporting Date	: **04-Jan-2016**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 6	Temperature	: 6.3, 8.2, 9.1, 0.9, 3.2, 3.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 77 / 54

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Extra samples 'AM-BH20 0.5-1.0', 'AM-BH20 1.0-1.5', 'AM-BH21 0.0-0.5', 'AM-BH21 1.0-1.5', 'AM-BH22 0.0-0.5', 'AM-BH22 0.5-1.0', 'AM-BH23 0.0-0.5' and 'AM-BH23 1.0-1.5' were received. These samples will remain on hold until confirmation of analysis is received. Please contact ALS Brisbane Client Services Department to add a directive for these samples at ALSEnviro.Brisbane@alsglobal.com**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFOS/PFOA analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The expected due date for this data is 11/01/2016.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- **Sample 'QC1' is listed on the COC twice though only one sample with this name was received. It is listed both as on hold and requiring PFOS/PFOA. This sample will be kept on hold until confirmation of analysis is received.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-07 SG TRH/BTEXN/PAH (SIM) inc Silica Gel Clean Up
EB1538419-001	[17-Dec-2015]	AM-BH09 0.00-0.25		✓					
EB1538419-002	[17-Dec-2015]	AM-BH09 0.25-0.50		✓					
EB1538419-003	[17-Dec-2015]	AM-BH09 0.50-0.75		✓					
EB1538419-004	[17-Dec-2015]	AM-BH09 0.75-1.00		✓					
EB1538419-005	[17-Dec-2015]	AM-BH09 1.00-1.25		✓					
EB1538419-006	[17-Dec-2015]	AM-BH09 1.25-1.50		✓					
EB1538419-007	[17-Dec-2015]	AM-BH09 1.50-1.75		✓					
EB1538419-008	[17-Dec-2015]	AM-BH09 1.75-2.00		✓					
EB1538419-009	[17-Dec-2015]	AM-BH09 2.00-2.25		✓					
EB1538419-010	[17-Dec-2015]	AM-BH09 2.25-2.50		✓					
EB1538419-011	[17-Dec-2015]	AM-BH09 2.50-2.75		✓					
EB1538419-012	[17-Dec-2015]	AM-BH09 2.75-3.00		✓					
EB1538419-013	[17-Dec-2015]	AM-BH09 0.00-0.50			✓		✓		
EB1538419-014	[17-Dec-2015]	AM-BH09 0.50-1.00			✓		✓		
EB1538419-015	[17-Dec-2015]	AM-BH09 1.00-1.50	✓						
EB1538419-016	[17-Dec-2015]	AM-BH09 1.50-2.00	✓						
EB1538419-017	[17-Dec-2015]	AM-BH09 2.00-2.50	✓						
EB1538419-018	[17-Dec-2015]	AM-BH09 2.50-3.00	✓						
EB1538419-019	[18-Dec-2015]	AM-BH17 0.00-0.25		✓					
EB1538419-020	[18-Dec-2015]	AM-BH17 0.25-0.50		✓					
EB1538419-021	[18-Dec-2015]	AM-BH17 0.50-0.75		✓					
EB1538419-022	[18-Dec-2015]	AM-BH17 0.75-1.00		✓					
EB1538419-023	[18-Dec-2015]	AM-BH17 1.00-1.25		✓					
EB1538419-024	[18-Dec-2015]	AM-BH17 1.25-1.50		✓					
EB1538419-025	[18-Dec-2015]	AM-BH17 1.50-1.75		✓					
EB1538419-026	[18-Dec-2015]	AM-BH17 1.75-2.00		✓					
EB1538419-027	[18-Dec-2015]	AM-BH17 2.00-2.25		✓					
EB1538419-028	[18-Dec-2015]	AM-BH17 2.25-2.50		✓					
EB1538419-029	[18-Dec-2015]	AM-BH17 2.50-2.75		✓					
EB1538419-030	[18-Dec-2015]	AM-BH17 2.75-3.00		✓					
EB1538419-031	[18-Dec-2015]	AM-BH17 0.00-0.50			✓		✓		
EB1538419-032	[18-Dec-2015]	AM-BH17 0.50-1.00	✓						
EB1538419-033	[18-Dec-2015]	AM-BH17 1.00-1.50			✓		✓		
EB1538419-034	[18-Dec-2015]	AM-BH17 1.50-2.00	✓						
EB1538419-035	[18-Dec-2015]	AM-BH17 2.00-2.50	✓						

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-07 SG TRH/BTEXN/PAH (SIM) inc Silica Gel Clean Up
EB1538419-036	[18-Dec-2015]	AM-BH17 2.50-3.00	✓						
EB1538419-037	[18-Dec-2015]	QC1	✓						
EB1538419-038	[17-Dec-2015]	AM-BH19 0.00-0.25		✓					
EB1538419-039	[17-Dec-2015]	AM-BH19 0.25-0.50		✓					
EB1538419-040	[17-Dec-2015]	AM-BH19 0.50-0.75		✓					
EB1538419-041	[17-Dec-2015]	AM-BH19 0.75-1.00		✓					
EB1538419-042	[17-Dec-2015]	AM-BH19 1.00-1.25		✓					
EB1538419-043	[17-Dec-2015]	AM-BH19 1.25-1.50		✓					
EB1538419-044	[17-Dec-2015]	AM-BH19 1.50-1.75		✓					
EB1538419-045	[17-Dec-2015]	AM-BH19 1.75-2.00		✓					
EB1538419-046	[17-Dec-2015]	AM-BH19 2.00-2.25		✓					
EB1538419-047	[17-Dec-2015]	AM-BH19 2.25-2.50		✓					
EB1538419-048	[17-Dec-2015]	AM-BH19 2.50-2.75		✓					
EB1538419-049	[17-Dec-2015]	AM-BH19 2.75-3.00		✓					
EB1538419-050	[17-Dec-2015]	AM-BH19 .00-0.50			✓		✓		
EB1538419-051	[17-Dec-2015]	AM-BH19 0.50-1.00	✓						
EB1538419-052	[17-Dec-2015]	AM-BH19 1.00-1.50	✓						
EB1538419-053	[17-Dec-2015]	AM-BH19 1.50-2.00			✓		✓		
EB1538419-054	[17-Dec-2015]	AM-BH19 2.00-2.50	✓						
EB1538419-055	[17-Dec-2015]	AM-BH19 2.50-3.00	✓						
EB1538419-056	[17-Dec-2015]	AM-BH20 0.00-0.50			✓	✓		✓	✓
EB1538419-057	[17-Dec-2015]	AM-BH21 0.50-1.00			✓	✓		✓	✓
EB1538419-058	[17-Dec-2015]	AM-BH22 1.00-1.50			✓	✓		✓	✓
EB1538419-059	[17-Dec-2015]	AM-BH23 0.50-1.00			✓	✓		✓	✓
EB1538419-060	[18-Dec-2015]	AM-BH28 0.00-0.25		✓					
EB1538419-061	[18-Dec-2015]	AM-BH28 0.25-0.50		✓					
EB1538419-062	[18-Dec-2015]	AM-BH28 0.50-0.75		✓					
EB1538419-063	[18-Dec-2015]	AM-BH28 1.50-1.75		✓					
EB1538419-064	[18-Dec-2015]	AM-BH28 2.50-2.75		✓					
EB1538419-065	[18-Dec-2015]	AM-BH28 2.75-3.00		✓					
EB1538419-066	[18-Dec-2015]	AM-BH28 0.00-0.50			✓		✓		
EB1538419-067	[18-Dec-2015]	AM-BH28 0.50-1.00	✓						
EB1538419-068	[18-Dec-2015]	AM-BH28 1.50-2.00	✓						
EB1538419-069	[18-Dec-2015]	AM-BH28 2.50-3.00			✓		✓		
EB1538419-071	[17-Dec-2015]	AM-BH20 0.5-1.0	✓						
EB1538419-072	[17-Dec-2015]	AM-BH20 1.0-1.5	✓						
EB1538419-073	[17-Dec-2015]	AM-BH21 0.0-0.5	✓						
EB1538419-074	[17-Dec-2015]	AM-BH21 1.0-1.5	✓						
EB1538419-075	[17-Dec-2015]	AM-BH22 0.0-0.5	✓						
EB1538419-076	[17-Dec-2015]	AM-BH22 0.5-1.0	✓						
EB1538419-077	[17-Dec-2015]	AM-BH23 0.0-0.5	✓						

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-07 SG TRH/BTEXN/PAH (SIM) inc Silica Gel Clean Up
EB1538419-078	[17-Dec-2015]	AM-BH23 1.0-1.5	✓						

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	kbiram@golder.com.au

TAMARA SICCAMA

- *AU Certificate of Analysis - NATA (COA)	Email	TSiccama@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	TSiccama@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	TSiccama@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	TSiccama@golder.com.au
- Chain of Custody (CoC) (COC)	Email	TSiccama@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	TSiccama@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	TSiccama@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	TSiccama@golder.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1600085**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 04-Jan-2016 15:20
C-O-C number	: ----	Date Analysis Commenced	: 07-Jan-2016
Sampler	: TAMARA SICCAMA	Issue Date	: 14-Jan-2016 13:05
Site	: ----		
		No. of samples received	: 11
Quote number	: ----	No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- EG020-F (Dissolved Metals by ICP-MS): Limit of reporting raised for some samples due to matrix interference.
- PFOS and PFOA results are reported as an aggregate of linear and branched isomers.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH01	AM-BH04	AM-BH08	AM-BH19	AM-BH28
			Client sampling date / time	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]
Compound	CAS Number	LOR	Unit	EB1600085-001	EB1600085-002	EB1600085-003	EB1600085-004	EB1600085-005
				Result	Result	Result	Result	Result
ED037P: Alkalinity by PC Titrator								
Total Alkalinity as CaCO3	----	1	mg/L	32	33	84	11	300
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	374	353	372	392	176
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	3640	3140	4800	1940	2570
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	11400	7560	6920	11300	13500
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	3.59	<0.05	<0.05	0.06	<0.05
Iron	7439-89-6	0.05	mg/L	122	118	125	117	29.8
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFOA	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PFOSA	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
PFBS	375-73-5	0.002	µg/L	<0.002	<0.002	0.004	0.004	<0.002
PFHxS	355-46-4	0.002	µg/L	<0.002	<0.002	<0.002	0.003	<0.002
PFDcS	67906-42-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFHxA	307-24-4	0.002	µg/L	<0.002	<0.002	0.009	0.005	<0.002
PFHpA	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFNA	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFDcA	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFUnA	2058-94-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFDoA	307-55-1	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFTriA	72629-94-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFTeA	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	BIP/MW1	BIP/MW2	BP/MW6	BAC-MW07	BAC-MW24
			Client sampling date / time	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]
Compound	CAS Number	LOR	Unit	EB1600085-006	EB1600085-007	EB1600085-008	EB1600085-009	EB1600085-010
				Result	Result	Result	Result	Result
ED037P: Alkalinity by PC Titrator								
Total Alkalinity as CaCO3	----	1	mg/L	<1	524	911	1300	800
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	735	120	121	213	139
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2340	2410	2960	1690	1340
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	7480	14600	14200	12600	18000
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	8.18	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L	294	53.8	22.0	24.9	37.1
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFOA	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	<0.01	<0.01	0.03	<0.01
8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PFOSA	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
PFBS	375-73-5	0.002	µg/L	0.006	0.002	<0.002	<0.002	<0.002
PFHxS	355-46-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFDcS	67906-42-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFHxA	307-24-4	0.002	µg/L	0.007	<0.002	<0.002	<0.002	<0.002
PFHpA	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFNA	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFDcA	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFUnA	2058-94-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFDoA	307-55-1	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFTriA	72629-94-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFTeA	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Q1 - Water	----	----	----	----
			Client sampling date / time	[04-Jan-2016]	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1600085-011	--------	--------	--------	--------
				Result	Result	Result	Result	Result
ED037P: Alkalinity by PC Titrator								
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.002	µg/L	<0.002	----	----	----	----
PFOA	335-67-1	0.002	µg/L	<0.002	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	----	----	----	----
PFOSA	754-91-6	0.002	µg/L	<0.002	----	----	----	----
N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	----	----	----	----
N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	----	----	----	----
N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	----	----	----	----
PFBS	375-73-5	0.002	µg/L	<0.002	----	----	----	----
PFHxS	355-46-4	0.002	µg/L	<0.002	----	----	----	----
PFDcS	67906-42-7	0.005	µg/L	<0.005	----	----	----	----
PFHxA	307-24-4	0.002	µg/L	<0.002	----	----	----	----
PFHpA	375-85-9	0.002	µg/L	<0.002	----	----	----	----
PFNA	375-95-1	0.002	µg/L	<0.002	----	----	----	----
PFDcA	335-76-2	0.002	µg/L	<0.002	----	----	----	----
PFUnA	2058-94-8	0.005	µg/L	<0.005	----	----	----	----
PFDoA	307-55-1	0.005	µg/L	<0.005	----	----	----	----
PFTriA	72629-94-8	0.005	µg/L	<0.005	----	----	----	----
PFTeA	376-06-7	0.05	µg/L	<0.05	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1600085**	Page	: 1 of 6
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 04-Jan-2016
C-O-C number	: ----	Date Analysis Commenced	: 07-Jan-2016
Sampler	: TAMARA SICCAMA	Issue Date	: 14-Jan-2016
Site	: ----	No. of samples received	: 11
Quote number	: ----	No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
ED037P: Alkalinity by PC Titrator (QC Lot: 324901)									
EB1600085-001	AM-BH01	ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	32	26	18.3	0% - 20%
ED038A: Acidity (QC Lot: 327200)									
EB1600085-001	AM-BH01	ED038: Acidity as CaCO3	----	1	mg/L	374	365	2.60	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 325426)									
EB1600080-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	22	22	0.00	0% - 20%
EB1600114-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	14	13	0.00	0% - 50%
ED045G: Chloride by Discrete Analyser (QC Lot: 325427)									
EB1600080-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	53	54	0.00	0% - 20%
EB1600114-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	27	26	4.25	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 324939)									
EB1600085-007	BIP/MW2	EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.05	<0.05	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	53.8	53.9	0.00	0% - 20%
EB1600005-001	Anonymous	EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.05	<0.05	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.52	0.54	3.05	No Limit
EP231: Perfluorinated Compounds (QC Lot: 325321)									
EB1600085-001	AM-BH01	EP231PFC-LL: PFBS	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFDcA	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFHpA	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFHxA	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFHxS	355-46-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFNA	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFOSA	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFDcS	67906-42-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFDoA	307-55-1	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFTriA	72629-94-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFUnA	2058-94-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231PFC-LL: PFTeA	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231PFC-LL: N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP231PFC-LL: N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EB1600085-011	Q1 - Water	EP231PFC-LL: PFBS	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFDcA	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFHpA	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFHxA	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231: Perfluorinated Compounds (QC Lot: 325321) - continued									
EB1600085-011	Q1 - Water	EP231PFC-LL: PFHxS	355-46-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFNA	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFOSA	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFDcS	67906-42-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFDoA	307-55-1	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFTriA	72629-94-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFUnA	2058-94-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231PFC-LL: PFTeA	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231PFC-LL: N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP231PFC-LL: N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 325322)									
EB1600085-001	AM-BH01	EP231-LL: PFOA	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231-LL: PFOS	1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231-LL: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231-LL: 8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EB1600085-011	Q1 - Water	EP231-LL: PFOA	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231-LL: PFOS	1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231-LL: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231-LL: 8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
ED037P: Alkalinity by PC Titrator (QCLot: 324901)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	100	87	112
ED038A: Acidity (QCLot: 327200)								
ED038: Acidity as CaCO3	----	----	mg/L	----	100 mg/L	101	90	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 325426)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	96.1	85	118
				<1	100 mg/L	101	85	118
ED045G: Chloride by Discrete Analyser (QCLot: 325427)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	108	90	115
				<1	1000 mg/L	100	90	115
EG020F: Dissolved Metals by ICP-MS (QCLot: 324939)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	91.0	79	118
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	82.5	82	114
EP231: Perfluorinated Compounds (QCLot: 325321)								
EP231PFC-LL: N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	0.1 µg/L	117	51	150
EP231PFC-LL: N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	0.1 µg/L	95.2	30	130
EP231PFC-LL: N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	0.1 µg/L	115	50	150
EP231PFC-LL: N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	0.1 µg/L	93.2	36	130
EP231PFC-LL: PFBS	375-73-5	0.002	µg/L	<0.002	0.02 µg/L	90.2	50	150
EP231PFC-LL: PFDcA	335-76-2	0.002	µg/L	<0.002	0.02 µg/L	92.9	65	150
EP231PFC-LL: PFDcS	67906-42-7	0.005	µg/L	<0.005	0.02 µg/L	102	50	150
EP231PFC-LL: PFDoA	307-55-1	0.005	µg/L	<0.005	0.02 µg/L	83.0	50	150
EP231PFC-LL: PFHpA	375-85-9	0.002	µg/L	<0.002	0.02 µg/L	110	61	150
EP231PFC-LL: PFHxA	307-24-4	0.002	µg/L	<0.002	0.02 µg/L	105	50	150
EP231PFC-LL: PFHxS	355-46-4	0.002	µg/L	<0.002	0.02 µg/L	107	50	150
EP231PFC-LL: PFNA	375-95-1	0.002	µg/L	<0.002	0.02 µg/L	114	53	150
EP231PFC-LL: PFOSA	754-91-6	0.002	µg/L	<0.002	0.02 µg/L	114	50	150
EP231PFC-LL: PFTeA	376-06-7	0.05	µg/L	<0.05	0.1 µg/L	75.1	30	150
EP231PFC-LL: PFTriA	72629-94-8	0.005	µg/L	<0.005	0.02 µg/L	78.4	30	150
EP231PFC-LL: PFUnA	2058-94-8	0.005	µg/L	<0.005	0.02 µg/L	102	50	150
EP231: Perfluorinated Compounds (QCLot: 325322)								
EP231-LL: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	0.1 µg/L	89.2	60	130
EP231-LL: 8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	0.1 µg/L	79.1	60	130
EP231-LL: PFOA	335-67-1	0.002	µg/L	<0.002	0.02 µg/L	115	60	130
EP231-LL: PFOS	1763-23-1	0.002	µg/L	<0.002	0.02 µg/L	102	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 325426)							
EB1600080-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	94.7	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 325427)							
EB1600080-002	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	112	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 324939)							
EB1600005-002	Anonymous	EG020A-F: Aluminium	7429-90-5	0.5 mg/L	103	70	130
EP231: Perfluorinated Compounds (QCLot: 325321)							
EB1600085-002	AM-BH04	EP231PFC-LL: N-Et-FOSA	4151-50-2	0.1 µg/L	116	50	150
		EP231PFC-LL: N-Me-FOSA	31506-32-8	0.1 µg/L	119	50	150
		EP231PFC-LL: PFBS	375-73-5	0.02 µg/L	106	50	150
		EP231PFC-LL: PFDcA	335-76-2	0.02 µg/L	87.9	50	150
		EP231PFC-LL: PFDoA	307-55-1	0.02 µg/L	86.6	50	150
		EP231PFC-LL: PFHpA	375-85-9	0.02 µg/L	79.3	50	150
		EP231PFC-LL: PFHxA	307-24-4	0.02 µg/L	84.7	50	150
		EP231PFC-LL: PFHxS	355-46-4	0.02 µg/L	110	50	150
		EP231PFC-LL: PFNA	375-95-1	0.02 µg/L	88.7	50	150
		EP231PFC-LL: PFOSA	754-91-6	0.02 µg/L	113	50	150
EP231: Perfluorinated Compounds (QCLot: 325322)							
EB1600085-002	AM-BH04	EP231-LL: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1 µg/L	97.0	60	130
		EP231-LL: 8:2 Fluorotelomer sulfonate	39108-34-4	0.1 µg/L	91.6	60	130
		EP231-LL: PFOA	335-67-1	0.02 µg/L	104	60	130
		EP231-LL: PFOS	1763-23-1	0.02 µg/L	114	60	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1600085**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61-7-3243 7222
Project	: 1538021	Date Samples Received	: 04-Jan-2016
Site	: ----	Issue Date	: 14-Jan-2016
Sampler	: TAMARA SICCAMA	No. of samples received	: 11
Order number	: 1538021	No. of samples analysed	: 11

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P)								
AM-BH01,	AM-BH04,	**04-Jan-2016**	**----**	----	----	**07-Jan-2016**	18-Jan-2016	✓
AM-BH08,	AM-BH19,							
AM-BH28,	BIP/MW1,							
BIP/MW2,	BP/MW6,							
BAC-MW07,	BAC-MW24							
ED038A: Acidity								
Clear Plastic Bottle - Natural (ED038)								
AM-BH01,	AM-BH04,	**04-Jan-2016**	**----**	----	----	**09-Jan-2016**	18-Jan-2016	✓
AM-BH08,	AM-BH19,							
AM-BH28,	BIP/MW1,							
BIP/MW2,	BP/MW6,							
BAC-MW07,	BAC-MW24							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G)								
AM-BH01,	AM-BH04,	**04-Jan-2016**	**----**	----	----	**08-Jan-2016**	01-Feb-2016	✓
AM-BH08,	AM-BH19,							
AM-BH28,	BIP/MW1,							
BIP/MW2,	BP/MW6,							
BAC-MW07,	BAC-MW24							
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G)								
AM-BH01,	AM-BH04,	**04-Jan-2016**	**----**	----	----	**08-Jan-2016**	01-Feb-2016	✓
AM-BH08,	AM-BH19,							
AM-BH28,	BIP/MW1,							
BIP/MW2,	BP/MW6,							
BAC-MW07,	BAC-MW24							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)								
AM-BH04,	AM-BH08,	**04-Jan-2016**	**----**	----	----	**07-Jan-2016**	02-Jul-2016	✓
BAC-MW07								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)								
AM-BH01,	AM-BH19,	**04-Jan-2016**	**----**	----	----	**07-Jan-2016**	02-Jul-2016	✓
AM-BH28,	BIP/MW1,							
BIP/MW2,	BP/MW6,							
BAC-MW24								
EP231: Perfluorinated Compounds								
HDPE (no PTFE) (EP231-LL)								
AM-BH01,	AM-BH04,	**04-Jan-2016**	**07-Jan-2016**	02-Jul-2016	✓	**07-Jan-2016**	02-Jul-2016	✓
AM-BH08,	AM-BH19,							
AM-BH28,	BIP/MW1,							
BIP/MW2,	BP/MW6,							
BAC-MW07,	BAC-MW24,							
Q1 - Water								
EP231: Perfluorinated Compounds								
HDPE (no PTFE) (EP231PFC-LL)								
AM-BH01,	AM-BH04,	**04-Jan-2016**	**07-Jan-2016**	02-Jul-2016	✓	**07-Jan-2016**	02-Jul-2016	✓
AM-BH08,	AM-BH19,							
AM-BH28,	BIP/MW1,							
BIP/MW2,	BP/MW6,							
BAC-MW07,	BAC-MW24,							
Q1 - Water								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS - Low Level	EP231PFC-LL	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PFOS, PFOA, 6:2- and 8:2-FtS	EP231-LL	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS - Low Level	EP231PFC-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PFOS, PFOA, 6:2- and 8:2-FtS	EP231-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS - Low Level	EP231PFC-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PFOS, PFOA, 6:2- and 8:2-FtS	EP231-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS - Low Level	EP231PFC-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PFOS, PFOA, 6:2- and 8:2-FtS	EP231-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
PFOS, PFOA, 6:2- and 8:2-FtS	EP231-LL	WATER	In-house: A portion of fresh or saline water is concentrated and cleaned up using a solid phase medium. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM.
Perfluorinated Compounds by LCMSMS - Low Level	EP231PFC-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction and LC-Electrospray-MS-MS, Negative Mode using MRM.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1600085**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 2
Order number	: 1538021	Quote number	: EM2015GOLASS0592 (EN-002-15)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: TAMARA SICCAMA		

Dates

Date Samples Received	: 04-Jan-2016 3:20 PM	Issue Date	: 04-Jan-2016
Client Requested Due Date	: 11-Jan-2016	Scheduled Reporting Date	: **11-Jan-2016**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 1.8°C - Ice present
Receipt Detail	: MEDIUM ESKY	No. of samples received / analysed	: 11 / 11

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **Ultra-Trace PFC analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The estimated date for this data is 13/01/2016.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - ED037-P Alkalinity as CaCO3 (PCT)	WATER - ED038 Default Acidity as CaCO3 only	WATER - ED041G Sulfate (Turbidimetric) as SO4 2 by Discrete	WATER - ED045G Chloride by Discrete Analyser	WATER - EG020F Dissolved Metals by ICPMS	WATER - EP231PFC-LL PFOS+Extended AFFFs (20 analytes) Ultra trace
EB1600085-001	[04-Jan-2016]	AM-BH01	✓	✓	✓	✓	✓	✓
EB1600085-002	[04-Jan-2016]	AM-BH04	✓	✓	✓	✓	✓	✓
EB1600085-003	[04-Jan-2016]	AM-BH08	✓	✓	✓	✓	✓	✓
EB1600085-004	[04-Jan-2016]	AM-BH19	✓	✓	✓	✓	✓	✓
EB1600085-005	[04-Jan-2016]	AM-BH28	✓	✓	✓	✓	✓	✓
EB1600085-006	[04-Jan-2016]	BIP/MW1	✓	✓	✓	✓	✓	✓
EB1600085-007	[04-Jan-2016]	BIP/MW2	✓	✓	✓	✓	✓	✓
EB1600085-008	[04-Jan-2016]	BP/MW6	✓	✓	✓	✓	✓	✓
EB1600085-009	[04-Jan-2016]	BAC-MW07	✓	✓	✓	✓	✓	✓
EB1600085-010	[04-Jan-2016]	BAC-MW24	✓	✓	✓	✓	✓	✓
EB1600085-011	[04-Jan-2016]	Q1 - Water						✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	kbiram@golder.com.au

TAMARA SICCAMA

- *AU Certificate of Analysis - NATA (COA)	Email	TSiccama@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	TSiccama@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	TSiccama@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	TSiccama@golder.com.au
- Chain of Custody (CoC) (COC)	Email	TSiccama@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	TSiccama@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	TSiccama@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	TSiccama@golder.com.au

Project ID	1538021	Quote/Order No.	EN/002/15
Site Location	Brisbane Airport	Lab Name	ALS Environmental
Sampled By	Tamara Siccama		
Turnaround Day	5	BY:	
Report Type	HARD FAX DISK	EMAIL	BULLETIN BOARD
Email Format	PDF Excel Other	Email Addr	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fi N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location &	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EP231-PFC-LL (PFS/PFOA extended suite with 20 analytes) - Ultra Trace	Chloride, Sulfate, Total Alkalinity, Total Acidity	Dissolved Metals (Al, Fe)
AM-BH01	1	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
AM-BH04	2	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
AM-BH08	3	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
AM-BH19	4	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
AM-BH28	5	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
BIP/MW1	6	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
BIP/MW2	7	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
BP/MW6	8	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
BAC-MW07	9	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
BAC-MW24	10	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
Q1 - Water	11	Water	04/01/2016		Bottle	Chilled	3	N		x		

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR)

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	04/01/2016	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory
Sample Cond.
Suitable Container
Cool Box

LAB BATCH NUMBER
Cond.
Bill to
Address
Address

REC: ALS 04/01/16 15:20 JUSTIN.

Environmental Division
Brisbane
Work Order Reference
EB1600085

Telephone : + 61-7-3243 7222

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1602738**	Page	: 1 of 9
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS TAMARA SICCAMA	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: TSiccama@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 03-Feb-2016 13:02
C-O-C number	: ----	Date Analysis Commenced	: 09-Feb-2016
Sampler	: TAMARA SICCAMA	Issue Date	: 09-Feb-2016 19:07
Site	: Brisbane Airport		
		No. of samples received	: 33
Quote number	: ----	No. of samples analysed	: 33

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- **This work order has been created to rebatch samples from previous ALS workorders EB1538408, EB1538415, EB1538419**
- ASS: EA033 (CRS Suite): ANC not required because pH KCl less than 6.5
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime ($CaCO_3$) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AMBH01 0.75-1.00 EB1538408-4	AMBH01 1.50-1.75 EB1538408-7	AMBH01 2.75-3.00 EB1538408-12	AMBH02 0.75-1.00 EB1538408-22	AMBH02 1.50-1.75 EB1538408-25
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1602738-001	EB1602738-002	EB1602738-003	EB1602738-004	EB1602738-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.2	5.0	4.8	4.3	5.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	88	16	16	63	8
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.14	0.02	0.02	0.10	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.217	0.006	0.177
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	135	<10	110
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.12	----	----	0.14	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	0.14	----	----	0.17	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	0.03	----	----	0.03	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	12	----	----	14	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	0.02	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.16	0.03	0.24	0.13	0.19
Net Acidity (acidity units)	----	10	mole H+ / t	102	17	151	81	118
Liming Rate	----	1	kg CaCO3/t	8	1	11	6	9
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.16	0.03	0.24	0.13	0.19
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	102	17	151	81	118
Liming Rate excluding ANC	----	1	kg CaCO3/t	8	1	11	6	9

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AMBH02 2.50-2.75 EB1538408-29	AMBH03 0.75-1.00 EB1538408-40	AMBH03 1.25-1.50 EB1538408-42	AMBH03 2.00-2.25 EB1538408-45	AMBH04 0.75-1.00 EB1538408-58
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1602738-006	EB1602738-007	EB1602738-008	EB1602738-009	EB1602738-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.4	4.2	4.6	5.0	4.2
Titratable Actual Acidity (23F)	----	2	mole H+ / t	3	62	36	11	76
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	0.10	0.06	<0.02	0.12
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.080	0.008	0.005	0.152	0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	50	<10	<10	95	<10
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	0.08	----	----	0.09
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	0.14	----	----	0.14
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	0.06	----	----	0.05
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	30	----	----	24
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	0.05	----	----	0.04
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.08	0.15	0.06	0.17	0.16
Net Acidity (acidity units)	----	10	mole H+ / t	53	96	40	106	103
Liming Rate	----	1	kg CaCO3/t	4	7	3	8	8
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.08	0.15	0.06	0.17	0.16
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	53	96	40	106	103
Liming Rate excluding ANC	----	1	kg CaCO3/t	4	7	3	8	8

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AMBH04 1.50-1.75 EB1538408-61	AMBH04 2.75-3.00 EB1538408-66	AMBH05 1.00-1.25 EB1538415-5	AMBH05 2.25-2.50 EB1538415-10	AMBH06 0.50-0.75 EB1538415-21
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1602738-011	EB1602738-012	EB1602738-013	EB1602738-014	EB1602738-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.7	6.3	4.1	4.4	4.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	26	<2	51	31	37
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.04	<0.02	0.08	0.05	0.06
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.017	0.284	<0.005	0.350	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	10	177	<10	219	<10
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	0.08	0.13	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	0.11	0.16	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	0.02	0.03	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	11	14	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	<0.02	0.02	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.06	0.29	0.10	0.42	0.06
Net Acidity (acidity units)	----	10	mole H+ / t	36	178	65	264	40
Liming Rate	----	1	kg CaCO3/t	3	13	5	20	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.06	0.29	0.10	0.42	0.06
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	36	178	65	264	40
Liming Rate excluding ANC	----	1	kg CaCO3/t	3	13	5	20	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AMBH06 1.25-1.50 EB1538415-24	AMBH06 2.25-2.50 EB1538415-28	AMBH07 0.75-1.00 EB1538415-39	AMBH07 2.00-2.25 EB1538415-44	AMBH07 2.75-3.00 EB1538415-47
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1602738-016	EB1602738-017	EB1602738-018	EB1602738-019	EB1602738-020
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.6	4.1	4.1	4.5	4.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	37	60	74	41	32
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.06	0.10	0.12	0.06	0.05
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.028	1.24	0.005	0.600	1.18
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	18	776	<10	374	738
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	0.27	0.12	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	0.31	0.19	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	0.04	0.07	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	18	33	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	0.03	0.05	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.09	1.37	0.18	0.66	1.23
Net Acidity (acidity units)	----	10	mole H+ / t	55	855	111	415	770
Liming Rate	----	1	kg CaCO3/t	4	64	8	31	58
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.09	1.37	0.18	0.66	1.23
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	55	855	111	415	770
Liming Rate excluding ANC	----	1	kg CaCO3/t	4	64	8	31	58

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AMBH08 0.75-1.00 EB1538415-56	AMBH08 1.75-2.00 EB1538415-60	AMBH08 2.75-3.00 EB1538415-64	AMBH09 0.75-1.00 EB1538419-4	AMBH09 1.50-1.75 EB1538419-7
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1602738-021	EB1602738-022	EB1602738-023	EB1602738-024	EB1602738-025
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.4	4.2	4.3	3.8	3.9
Titratable Actual Acidity (23F)	----	2	mole H+ / t	60	79	78	88	90
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.10	0.13	0.12	0.14	0.14
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.032	1.16	1.79	0.019	0.024
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	20	722	1120	12	15
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.45	0.34	0.41	0.04	0.06
HCl Extractable Sulfur (20Be)	----	0.02	% S	0.48	0.37	0.44	0.05	0.09
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	0.03	0.03	0.03	<0.02	0.03
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	14	15	15	<10	16
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	0.02	0.02	0.02	<0.02	0.02
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.15	1.31	1.94	0.17	0.20
Net Acidity (acidity units)	----	10	mole H+ / t	93	817	1210	109	122
Liming Rate	----	1	kg CaCO3/t	7	61	91	8	9
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.15	1.31	1.94	0.17	0.20
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	93	817	1210	109	122
Liming Rate excluding ANC	----	1	kg CaCO3/t	7	61	91	8	9

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AMBH09 2.75-30.0 EB1538419-12	AMBH17 0.75-1.00 EB1538419-22	AMBH17 2.25-2.50 EB1538419-28	AMBH19 0.50-0.75 EB1538419-40	AMBH19 0.50-2.75 EB1538419-48
			Client sampling date / time	[17-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1602738-026	EB1602738-027	EB1602738-028	EB1602738-029	EB1602738-030
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.9	5.1	3.9	4.3	5.0
Titratable Actual Acidity (23F)	----	2	mole H+ / t	13	84	167	199	18
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.13	0.27	0.32	0.03
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.009	1.76	3.84	0.051	0.406
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	1100	2390	32	254
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	0.64	0.09	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	0.79	0.12	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	0.15	0.03	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	68	13	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	0.11	0.02	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.03	1.90	4.21	0.39	0.44
Net Acidity (acidity units)	----	10	mole H+ / t	18	1180	2630	244	272
Liming Rate	----	1	kg CaCO3/t	1	89	197	18	20
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.03	1.90	4.21	0.39	0.44
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	18	1180	2630	244	272
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	89	197	18	20

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AMBH28 0.50-0.75 EB1538419-62	AMBH28 1.50-1.75 EB1538419-63	AMBH28 2.50-2.75 EB1538419-64	----	----
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	----	----
Compound	CAS Number	LOR	Unit	EB1602738-031	EB1602738-032	EB1602738-033	--------	--------
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.6	4.2	4.7	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	35	97	47	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.06	0.16	0.07	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.057	1.39	1.23	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	36	868	768	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	0.33	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	0.36	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	0.04	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	17	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	0.03	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	----	----
Net Acidity (sulfur units)	----	0.02	% S	0.11	1.57	1.31	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	71	982	815	----	----
Liming Rate	----	1	kg CaCO3/t	5	74	61	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.11	1.57	1.31	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	71	982	815	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	5	74	61	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1602738**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS TAMARA SICCAMA	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: TSiccama@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 03-Feb-2016
C-O-C number	: ----	Date Analysis Commenced	: 09-Feb-2016
Sampler	: TAMARA SICCAMA	Issue Date	: 09-Feb-2016
Site	: Brisbane Airport	No. of samples received	: 33
Quote number	: ----	No. of samples analysed	: 33

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 352782)									
EB1602738-001	AMBH01 0.75-1.00 EB1538408-4	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.14	0.14	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	88	91	2.30	0% - 20%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.2	4.2	0.00	0% - 20%
EB1602738-011	AMBH04 1.50-1.75 EB1538408-61	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.04	0.04	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	26	26	0.00	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.7	4.7	0.00	0% - 20%
EA033-A: Actual Acidity (QC Lot: 352783)									
EB1602738-021	AMBH08 0.75-1.00 EB1538415-56	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.10	0.10	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	60	59	0.00	0% - 20%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.4	4.4	0.00	0% - 20%
EB1602738-031	AMBH28 0.50-0.75 EB1538419-62	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.06	0.06	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	35	37	5.31	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.6	4.6	0.00	0% - 20%
EA033-B: Potential Acidity (QC Lot: 352782)									
EB1602738-001	AMBH01 0.75-1.00 EB1538408-4	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	<0.005	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EB1602738-011	AMBH04 1.50-1.75 EB1538408-61	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.017	0.016	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	10	10	0.00	No Limit
EA033-B: Potential Acidity (QC Lot: 352783)									
EB1602738-021	AMBH08 0.75-1.00 EB1538415-56	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.032	0.030	7.07	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	20	18	7.07	No Limit
EB1602738-031	AMBH28 0.50-0.75 EB1538419-62	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.057	0.058	0.00	0% - 50%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	36	36	0.00	No Limit
EA033-D: Retained Acidity (QC Lot: 352782)									

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA033-D: Retained Acidity (QC Lot: 352782) - continued									
EB1602738-001	AMBH01 0.75-1.00 EB1538408-4	EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	0.02	0.00	No Limit
		EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	0.14	0.14	0.00	No Limit
		EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.12	0.12	0.00	No Limit
		EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	0.03	0.03	0.00	No Limit
		EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	12	13	0.00	No Limit
EA033-D: Retained Acidity (QC Lot: 352783)									
EB1602738-021	AMBH08 0.75-1.00 EB1538415-56	EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	0.02	0.02	0.00	No Limit
		EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	0.48	0.48	0.00	0% - 20%
		EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.45	0.45	0.00	0% - 20%
		EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	0.03	0.03	0.00	No Limit
		EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	14	14	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 352782)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.8 pH Unit	97.9	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	15 mole H+ / t	95.3	70	130
EA033-A: Actual Acidity (QCLot: 352783)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.8 pH Unit	97.9	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	15 mole H+ / t	89.5	70	130
EA033-B: Potential Acidity (QCLot: 352782)								
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.295 % S	89.8	70	130
EA033-B: Potential Acidity (QCLot: 352783)								
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.295 % S	92.2	70	130
EA033-D: Retained Acidity (QCLot: 352782)								
EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	----
EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	<0.02	0.026 % S	98.9	70	130
EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	0.052 % S	81.0	70	130
EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	----
EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-D: Retained Acidity (QCLot: 352783)								
EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	----
EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	<0.02	0.026 % S	98.9	70	130
EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	0.052 % S	81.0	70	130
EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	----
EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1602738**	Page	: 1 of 4
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS TAMARA SICCAMA	Telephone	: +61-7-3243 7222
Project	: 1538021	Date Samples Received	: 03-Feb-2016
Site	: Brisbane Airport	Issue Date	: 09-Feb-2016
Sampler	: TAMARA SICCAMA	No. of samples received	: 33
Order number	: 1538021	No. of samples analysed	: 33

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-B: Potential Acidity							
80* dried soil (EA033) AMBH01 0.75-1.00 - EB1538408-4, AMBH01 1.50-1.75 - EB1538408-7, AMBH01 2.75-3.00 - EB1538408-12, AMBH02 0.75-1.00 - EB1538408-22, AMBH02 1.50-1.75 - EB1538408-25, AMBH02 2.50-2.75 - EB1538408-29, AMBH03 0.75-1.00 - EB1538408-40, AMBH03 1.25-1.50 - EB1538408-42, AMBH03 2.00-2.25 - EB1538408-45, AMBH04 0.75-1.00 - EB1538408-58, AMBH04 1.50-1.75 - EB1538408-61, AMBH04 2.75-3.00 - EB1538408-66, AMBH05 1.00-1.25 - EB1538415-5, AMBH05 2.25-2.50 - EB1538415-10, AMBH06 0.50-0.75 - EB1538415-21, AMBH06 1.25-1.50 - EB1538415-24, AMBH06 2.25-2.50 - EB1538415-28, AMBH07 0.75-1.00 - EB1538415-39, AMBH07 2.00-2.25 - EB1538415-44, AMBH07 2.75-3.00 - EB1538415-47, AMBH08 0.75-1.00 - EB1538415-56, AMBH08 1.75-2.00 - EB1538415-60, AMBH08 2.75-3.00 - EB1538415-64	**16-Dec-2015**	**09-Feb-2016**	15-Dec-2016	✓	**09-Feb-2016**	09-May-2016	✓
80* dried soil (EA033) AMBH09 0.75-1.00 - EB1538419-4, AMBH09 1.50-1.75 - EB1538419-7, AMBH09 2.75-30.0 - EB1538419-12, AMBH19 0.50-0.75 - EB1538419-40, AMBH19 0.50-2.75 - EB1538419-48	**17-Dec-2015**	**09-Feb-2016**	16-Dec-2016	✓	**09-Feb-2016**	09-May-2016	✓
80* dried soil (EA033) AMBH17 0.75-1.00 - EB1538419-22, AMBH17 2.25-2.50 - EB1538419-28, AMBH28 0.50-0.75 - EB1538419-62, AMBH28 1.50-1.75 - EB1538419-63, AMBH28 2.50-2.75 - EB1538419-64	**18-Dec-2015**	**09-Feb-2016**	17-Dec-2016	✓	**09-Feb-2016**	09-May-2016	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	4	33	**12.12**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	2	33	**6.06**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	2	33	**6.06**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1602738**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS TAMARA SICCAMA	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: TSiccama@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 4
Order number	: 1538021	Quote number	: EM2015GOLASS0592 (EN-002-15)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisabne Airport		
Sampler	: TAMARA SICCAMA		

Dates

Date Samples Received	: 03-Feb-2016 1:02 PM	Issue Date	: 03-Feb-2016
Client Requested Due Date	: 09-Feb-2016	Scheduled Reporting Date	: **09-Feb-2016**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: CHILLED
Receipt Detail	: REBATCH	No. of samples received / analysed	: 33 / 33

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This work order has been created to rebatch samples from previous ALS workorders EB1538408, EB1538415, EB1538419**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EB1602738-001	[16-Dec-2015]	AMBH01 0.75-1.00 - EB1538408-4
EB1602738-002	[16-Dec-2015]	AMBH01 1.50-1.75 - EB1538408-7
EB1602738-003	[16-Dec-2015]	AMBH01 2.75-3.00 - EB1538408-12
EB1602738-004	[16-Dec-2015]	AMBH02 0.75-1.00 - EB1538408-22
EB1602738-005	[16-Dec-2015]	AMBH02 1.50-1.75 - EB1538408-25
EB1602738-006	[16-Dec-2015]	AMBH02 2.50-2.75 - EB1538408-29
EB1602738-007	[16-Dec-2015]	AMBH03 0.75-1.00 - EB1538408-40
EB1602738-008	[16-Dec-2015]	AMBH03 1.25-1.50 - EB1538408-42
EB1602738-009	[16-Dec-2015]	AMBH03 2.00-2.25 - EB1538408-45
EB1602738-010	[16-Dec-2015]	AMBH04 0.75-1.00 - EB1538408-58
EB1602738-011	[16-Dec-2015]	AMBH04 1.50-1.75 - EB1538408-61
EB1602738-012	[16-Dec-2015]	AMBH04 2.75-3.00 - EB1538408-66
EB1602738-013	[16-Dec-2015]	AMBH05 1.00-1.25 - EB1538415-5
EB1602738-014	[16-Dec-2015]	AMBH05 2.25-2.50 - EB1538415-10
EB1602738-015	[16-Dec-2015]	AMBH06 0.50-0.75 - EB1538415-21
EB1602738-016	[16-Dec-2015]	AMBH06 1.25-1.50 - EB1538415-24
EB1602738-017	[16-Dec-2015]	AMBH06 2.25-2.50 - EB1538415-28
EB1602738-018	[16-Dec-2015]	AMBH07 0.75-1.00 - EB1538415-39
EB1602738-019	[16-Dec-2015]	AMBH07 2.00-2.25 - EB1538415-44
EB1602738-020	[16-Dec-2015]	AMBH07 2.75-3.00 - EB1538415-47
EB1602738-021	[16-Dec-2015]	AMBH08 0.75-1.00 - EB1538415-56
EB1602738-022	[16-Dec-2015]	AMBH08 1.75-2.00 - EB1538415-60
EB1602738-023	[16-Dec-2015]	AMBH08 2.75-3.00 - EB1538415-64
EB1602738-024	[17-Dec-2015]	AMBH09 0.75-1.00 - EB1538419-4
EB1602738-025	[17-Dec-2015]	AMBH09 1.50-1.75 - EB1538419-7
EB1602738-026	[17-Dec-2015]	AMBH09 2.75-30.0 - EB1538419-12
EB1602738-027	[18-Dec-2015]	AMBH17 0.75-1.00 - EB1538419-22
EB1602738-028	[18-Dec-2015]	AMBH17 2.25-2.50 - EB1538419-28
EB1602738-029	[17-Dec-2015]	AMBH19 0.50-0.75 - EB1538419-40
EB1602738-030	[17-Dec-2015]	AMBH19 0.50-2.75 - EB1538419-48
EB1602738-031	[18-Dec-2015]	AMBH28 0.50-0.75 - EB1538419-62
EB1602738-032	[18-Dec-2015]	AMBH28 1.50-1.75 - EB1538419-63
EB1602738-033	[18-Dec-2015]	AMBH28 2.50-2.75 - EB1538419-64

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EA033 Chromium Suite for Acid Sulphate Soils
EB1602738-001	[16-Dec-2015]	AMBH01 0.75-1.00 EB...	✓
EB1602738-002	[16-Dec-2015]	AMBH01 1.50-1.75 EB...	✓
EB1602738-003	[16-Dec-2015]	AMBH01 2.75-3.00 EB...	✓
EB1602738-004	[16-Dec-2015]	AMBH02 0.75-1.00 EB...	✓
EB1602738-005	[16-Dec-2015]	AMBH02 1.50-1.75 EB...	✓
EB1602738-006	[16-Dec-2015]	AMBH02 2.50-2.75 EB...	✓

			SOIL - EA033 Chromium Suite for Acid Sulphate Soils
EB1602738-007	[16-Dec-2015]	AMBH03 0.75-1.00 EB...	✓
EB1602738-008	[16-Dec-2015]	AMBH03 1.25-1.50 EB...	✓
EB1602738-009	[16-Dec-2015]	AMBH03 2.00-2.25 EB...	✓
EB1602738-010	[16-Dec-2015]	AMBH04 0.75-1.00 EB...	✓
EB1602738-011	[16-Dec-2015]	AMBH04 1.50-1.75 EB...	✓
EB1602738-012	[16-Dec-2015]	AMBH04 2.75-3.00 EB...	✓
EB1602738-013	[16-Dec-2015]	AMBH05 1.00-1.25 EB...	✓
EB1602738-014	[16-Dec-2015]	AMBH05 2.25-2.50 EB...	✓
EB1602738-015	[16-Dec-2015]	AMBH06 0.50-0.75 EB...	✓
EB1602738-016	[16-Dec-2015]	AMBH06 1.25-1.50 EB...	✓
EB1602738-017	[16-Dec-2015]	AMBH06 2.25-2.50 EB...	✓
EB1602738-018	[16-Dec-2015]	AMBH07 0.75-1.00 EB...	✓
EB1602738-019	[16-Dec-2015]	AMBH07 2.00-2.25 EB...	✓
EB1602738-020	[16-Dec-2015]	AMBH07 2.75-3.00 EB...	✓
EB1602738-021	[16-Dec-2015]	AMBH08 0.75-1.00 EB...	✓
EB1602738-022	[16-Dec-2015]	AMBH08 1.75-2.00 EB...	✓
EB1602738-023	[16-Dec-2015]	AMBH08 2.75-3.00 EB...	✓
EB1602738-024	[17-Dec-2015]	AMBH09 0.75-1.00 EB...	✓
EB1602738-025	[17-Dec-2015]	AMBH09 1.50-1.75 EB...	✓
EB1602738-026	[17-Dec-2015]	AMBH09 2.75-30.0 EB...	✓
EB1602738-027	[18-Dec-2015]	AMBH17 0.75-1.00 EB...	✓
EB1602738-028	[18-Dec-2015]	AMBH17 2.25-2.50 EB...	✓
EB1602738-029	[17-Dec-2015]	AMBH19 0.50-0.75 EB...	✓
EB1602738-030	[17-Dec-2015]	AMBH19 0.50-2.75 EB...	✓
EB1602738-031	[18-Dec-2015]	AMBH28 0.50-0.75 EB...	✓
EB1602738-032	[18-Dec-2015]	AMBH28 1.50-1.75 EB...	✓
EB1602738-033	[18-Dec-2015]	AMBH28 2.50-2.75 EB...	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTAL-RAE BROOKS

- *AU Certificate of Analysis - NATA (COA)	Email	kbrooks@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbrooks@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbrooks@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbrooks@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbrooks@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	kbrooks@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbrooks@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	kbrooks@golder.com.au

TAMARA SICCAMA

- *AU Certificate of Analysis - NATA (COA)	Email	TSiccama@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	TSiccama@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	TSiccama@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	TSiccama@golder.com.au
- Chain of Custody (CoC) (COC)	Email	TSiccama@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	TSiccama@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	TSiccama@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	TSiccama@golder.com.au

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Project ID:	1538021	**Quote/Order No.:**	EN/002/15
Site Location:	Brisbane Airport	**Lab Name:**	ALS Environmental
Sampled By:	Tamara Siccama		
Turnaround (Days)	3	**BY:**	
Report Format:	HARD ☐ FAX ☐ DISK ☐	EMAIL ☑ BULLETIN BOARD ☐	
Email Format:	PDF ☑ Excel ☑ Other ☐	**Email Addre:**	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions: Rebatch of EB1538408, EB1538415 and EB1538419.

Samples from a declared Fire Ant Area: N

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

LAB ID	Field Location	Depth	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	Chromium Suite Complete (EA033)
1 EB1538408-4	AM-BH01	0.75-1.00	Soil	16/12/2015		Bag		1		x
2 EB1538408-7	AM-BH01	1.50-1.75	Soil	16/12/2015		Bag		1		x
3 EB1538408-12	AM-BH01	2.75-3.00	Soil	16/12/2015		Bag		1		x
4 EB1538408-22	AM-BH02	0.75-1.00	Soil	16/12/2015		Bag		1		x
5 EB1538408-25	AM-BH02	1.50-1.75	Soil	16/12/2015		Bag		1		x
6 EB1538408-29	AM-BH02	2.50-2.75	Soil	16/12/2015		Bag		1		x
7 EB1538408-40	AM-BH03	0.75-1.00	Soil	16/12/2015		Bag		1		x
8 EB1538408-42	AM-BH03	1.25-1.50	Soil	16/12/2015		Bag		1		x
9 EB1538408-45	AM-BH03	2.00-2.25	Soil	16/12/2015		Bag		1		x
10 EB1538408-58	AM-BH04	0.75-1.00	Soil	16/12/2015		Bag		1		x
11 EB1538408-61	AM-BH04	1.50-1.75	Soil	16/12/2015		Bag		1		x
12 EB1538408-66	AM-BH04	2.75-3.00	Soil	16/12/2015		Bag		1		x
13 EB1538415-5	AM-BH05	1.00-1.25	Soil	16/12/2015		Bag		1		x
14 EB1538415-10	AM-BH05	2.25-2.50	Soil	16/12/2015		Bag		1		x
15 EB1538415-21	AM-BH06	0.50-0.75	Soil	16/12/2015		Bag		1		x
16 EB1538415-24	AM-BH06	1.25-1.50	Soil	16/12/2015		Bag		1		x
17 EB1538415-28	AM-BH06	2.25-2.50	Soil	16/12/2015		Bag		1		x
18 EB1538415-39	AM-BH07	0.75-1.00	Soil	16/12/2015		Bag		1		x
19 EB1538415-44	AM-BH07	2.00-2.25	Soil	16/12/2015		Bag		1		x
20 EB1538415-47	AM-BH07	2.75-3.00	Soil	16/12/2015		Bag		1		x

Environmental Division
Brisbane
Work Order Reference
EB1602738

Telephone : + 61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Emma Cornish	GOLDER	3/02/2016	1:00pm
RECEIVED BY	JUSTIN	ALS	03/02/16	13:02
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**Brisbane Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**3**	**BY:**	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☑ Other ☐ Email Addre: tsiccama@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions: Rebatch of EB1538408, EB1538415 and EB1538419.

Samples from a declared Fire Ant Area: N

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	LAB ID	Field Location	Depth	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	Chromium Suite Complete (EA033)
21	EB1538415-56	AM-BH08	0.75-1.00	Soil	16/12/2015		Bag		1		x
22	EB1538415-60	AM-BH08	1.75-2.00	Soil	16/12/2015		Bag		1		x
23	EB1538415-64	AM-BH08	2.75-3.00	Soil	16/12/2015		Bag		1		x
24	EB1538419-4	AM-BH09	0.75-1.00	Soil	17/12/2015		Bag		1		x
25	EB1538419-7	AM-BH09	1.50-1.75	Soil	17/12/2015		Bag		1		x
26	EB1538419-12	AM-BH09	2.75-3.00	Soil	17/12/2015		Bag		1		x
27	EB1538419-22	AM-BH17	0.75-1.00	Soil	18/12/2015		Bag		1		x
28	EB1538419-28	AM-BH17	2.25-2.50	Soil	18/12/2015		Bag		1		x
29	EB1538419-40	AM-BH19	0.50-0.75	Soil	17/12/2015		Bag		1		x
30	EB1538419-48	AM-BH19	2.50-2.75	Soil	17/12/2015		Bag		1		x
31	EB1538419-62	AM-BH28	0.50-0.75	Soil	18/12/2015		Bag		1		x
32	EB1538419-63	AM-BH28	1.50-1.75	Soil	18/12/2015		Bag		1		x
33	EB1538419-64	AM-BH28	2.50-2.75	Soil	18/12/2015		Bag		1		x

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Emma Cornish	GOLDER	3/02/2016	1:00pm
RECEIVED BY		ALS	03/02	13:02
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		Chilled		LAB. BATCH NUMBER	
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address	

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Client Manager - Stafford
ALS | Environmental Division

2 Byth St,

Stafford, Qld, 4053, Australia

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T +61 7 3243 7222

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EnviroMail™ 93 - Quality Assurance, Quality Control and DQI Reporting to Maximise Data Quality

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EnviroMail™ 96 - Bench Trials for Remediation or Assessment of New Technologies

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From: Cornish, Emma [mailto:ECornish@golder.com.au]
Sent: Wednesday, 3 February 2016 12:04 PM
To: Tom Maloney
Cc: Siccama, Tamara; Biram, Krystle-Rae
Subject: Rebatch of EB1538408, EB1538415 and EB1538419 (Project No.1538021)

Hi,

COC attached is a re-batch of lab references EB1538408, EB1538415 and EB1538419. Selected samples are requested for Chromium Suite Complete (EA033).

Kind regards,
Emma

Emma Cornish (BSc) | Environmental Scientist | **Golder Associates Pty Ltd**
216 Draper Street, Cairns, Queensland 4870, Australia (PO Box 5823, Cairns QLD 4870)
T: +61 7 4054 8200 | **D:** +61 7 40548256 | **F:** +61 7 4054 8201 | **M:** +61 0407334931 | **E:** ECornish@golder.com.au | **www.golder.com**

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre:	scurti@golder.com.au

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Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
1	AM-BH26	0	0.25	soil	6/10/2016		bag		1	N		X	X						
2	AM-BH26	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X			
3	AM-BH26	0.5	0.75	soil	6/10/2016		bag		1	N		X	X						
4	AM-BH26	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X						
5	AM-BH26	1	1.25	soil	6/10/2016		bag		1	N		X	X						
6	AM-BH26	1.25	1.5	soil	6/10/2016		bag		1	N		X	X						
7	AM-BH26	1.5	1.75	soil	6/10/2016		bag		1	N		X	X						
8	AM-BH26	1.75	2	soil	6/10/2016		bag+2 jars		3	N		X	X						
9	AM-BH26	2	2.25	soil	6/10/2016		bag		1	N		X	X						
10	AM-BH26	2.25	2.5	soil	6/10/2016		bag		1	N		X	X						
11	AM-BH26	2.5	2.75	soil	6/10/2016		bag		1	N		X	X						
12	AM-BH26	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			X			
13	AM-BH26	0	0.1	soil	6/10/2016		jar		1	N							X	X	X

Environmental Division
Brisbane
Work Order Reference
EB1624693

Telephone : + 61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Container		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project Number:	1538021	Quote/Order No.:	EN/002/15
Project Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Phone: (07) 3721 5400
Fax: (07) 3721 5401
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Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400

Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
14	AM-BH18	0	0.25	soil	6/10/2016		bag		1	N		X	X			
15	AM-BH18	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
16	AM-BH18	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
17	AM-BH18	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
18	AM-BH18	1	1.25	soil	6/10/2016		bag		1	N		X	X			
19	AM-BH18	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
20	AM-BH18	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
21	AM-BH18	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			X
22	AM-BH18	2	2.25	soil	6/10/2016		bag		1	N		X	X			
23	AM-BH18	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
24	AM-BH18	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
25	AM-BH18	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analyzing Laboratory

LAB BATCH NUMBER

Security Seal: Chilled: Bill to:

Suitable Containers: Frozen: Address:

Condition: Ambient:

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project Number:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Invoice to be sent to Accounts: auaccountspayablo@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
26	AM-BH24	0	0.25	soil	6/10/2016		bag		1	N		X	X			
27	AM-BH24	0.25	0.5	soil	6/10/2016		bag+2jars		3	N		X	X	X	X	X
28	AM-BH24	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
29	AM-BH24	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
30	AM-BH24	1	1.25	soil	6/10/2016		bag		1	N		X	X			
31	AM-BH24	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
32	AM-BH24	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
33	AM-BH24	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
34	AM-BH24	2	2.25	soil	6/10/2016		bag		1	N		X	X			
35	AM-BH24	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
36	AM-BH24	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
37	AM-BH24	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			
38	AM-BH24	1.1	1.2	soil	6/10/2016		jar		1	N	X					

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14/10		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

Security Seal		Chilled	LAB BATCH NUMBER		
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Location:	1538021	Quote/Order No:	EN/002/15
Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
39	AM-BH10	0	0.25	soil	6/10/2016		bag	1	N		X	X			
40	AM-BH10	0.25	0.5	soil	6/10/2016		bag+2jar	3	N		X	X	X	X	X
41	AM-BH10	0.5	0.75	soil	6/10/2016		bag	1	N		X	X			
42	AM-BH10	0.75	1	soil	6/10/2016		bag+jar	2	N		X	X			
43	AM-BH10	1	1.25	soil	6/10/2016		bag	1	N		X	X			
44	AM-BH10	1.25	1.5	soil	6/10/2016		bag	1	N		X	X			
45	AM-BH10	1.5	1.75	soil	6/10/2016		bag	1	N		X	X			
46	AM-BH10	1.75	2	soil	6/10/2016		bag+jar	2	N		X	X			X
47	AM-BH10	2	2.25	soil	6/10/2016		bag	1	N		X	X			
48	AM-BH10	2.25	2.5	soil	6/10/2016		bag	1	N		X	X			
49	AM-BH10	2.5	2.75	soil	6/10/2016		bag	1	N		X	X			
50	AM-BH10	2.75	3	soil	6/10/2016		bag+jar	2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

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	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14/10		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Sealing Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Job Number:	1538021	Quote/Order No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Golder Associates

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
51	AM-BH32	0	0.25	soil	10/10/2016		bag		1	N		X	X			
52	AM-BH32	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
53	AM-BH32	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
54	AM-BH32	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			
55	AM-BH32	1	1.25	soil	10/10/2016		bag		1	N		X	X			
56	AM-BH32	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
57	AM-BH32	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
58	AM-BH32	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			
59	AM-BH32	2	2.25	soil	10/10/2016		bag		1	N		X	X			
60	AM-BH32	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
61	AM-BH32	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
62	AM-BH32	2.75	3	soil	10/10/2016		bag+jar		2	N		X	X			X

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		Chilled	LAB BATCH NUMBER		
Suitable Containers		Frozen	Bill to:		
Cool Box		Ambient	Address		

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Job Number:	1538021	Quote/Order No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
63 AM-BH29	0	0.25	soil	7/10/2016		bag		1	N		X	X						
64 AM-BH29	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
65 AM-BH29	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
66 AM-BH29	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
67 AM-BH29	1	1.25	soil	7/10/2016		bag		1	N		X	X						
68 AM-BH29	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
69 AM-BH29	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
70 AM-BH29	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X			X			
71 AM-BH29	2	2.25	soil	7/10/2016		bag		1	N		X	X						
72 AM-BH29	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
73 AM-BH29	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
74 AM-BH29	2.75	3	soil	7/10/2016		bag+jar		2	N		X	X						
75 AM-BH29	0	0.1	soil	7/10/2016		jar		1	N							X	X	X

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER		
RECEIVED BY	CHRES	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

TO BE Filled Out By Analytical Laboratory

Security Seal		Chilled		LAB BATCH NUMBER	
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STA[illegible] ON RECEIPT OF SAMPLES.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1624693**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 4
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 14-Oct-2016 4:00 PM	Issue Date	: 17-Oct-2016
Client Requested Due Date	: 21-Oct-2016	Scheduled Reporting Date	: **21-Oct-2016**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 0.1°C, 0.4°C, 1.2°C
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 74 / 73

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please be advised that sample "AM-BH26 0-0.1" was not received at the laboratory (denoted SNR on the scanned COC).**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH
EB1624693-001	[06-Oct-2016]	AM-BH26 0-0.25		✓					
EB1624693-002	[06-Oct-2016]	AM-BH26 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-003	[06-Oct-2016]	AM-BH26 0.5-0.75		✓					
EB1624693-004	[06-Oct-2016]	AM-BH26 0.75-1		✓					
EB1624693-005	[06-Oct-2016]	AM-BH26 1-1.25		✓					
EB1624693-006	[06-Oct-2016]	AM-BH26 1.25-1.5		✓					
EB1624693-007	[06-Oct-2016]	AM-BH26 1.5-1.75		✓					
EB1624693-008	[06-Oct-2016]	AM-BH26 1.75-2		✓					
EB1624693-009	[06-Oct-2016]	AM-BH26 2-2.25		✓					
EB1624693-010	[06-Oct-2016]	AM-BH26 2.25-2.5		✓					
EB1624693-011	[06-Oct-2016]	AM-BH26 2.5-2.75		✓					
EB1624693-012	[06-Oct-2016]	AM-BH26 2.75-3		✓	✓		✓		
EB1624693-014	[06-Oct-2016]	AM-BH18 0-0.25		✓					
EB1624693-015	[06-Oct-2016]	AM-BH18 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-016	[06-Oct-2016]	AM-BH18 0.5-0.75		✓					
EB1624693-017	[06-Oct-2016]	AM-BH18 0.75-1		✓					
EB1624693-018	[06-Oct-2016]	AM-BH18 1-1.25		✓					
EB1624693-019	[06-Oct-2016]	AM-BH18 1.25-1.5		✓					
EB1624693-020	[06-Oct-2016]	AM-BH18 1.5-1.75		✓					
EB1624693-021	[06-Oct-2016]	AM-BH18 1.75-2		✓	✓		✓		
EB1624693-022	[06-Oct-2016]	AM-BH18 2-2.25		✓					
EB1624693-023	[06-Oct-2016]	AM-BH18 2.25-2.5		✓					
EB1624693-024	[06-Oct-2016]	AM-BH18 2.5-2.75		✓					
EB1624693-025	[06-Oct-2016]	AM-BH18 2.75-3		✓					
EB1624693-026	[06-Oct-2016]	AM-BH24 0-0.25		✓					
EB1624693-027	[06-Oct-2016]	AM-BH24 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-028	[06-Oct-2016]	AM-BH24 0.5-0.75		✓					
EB1624693-029	[06-Oct-2016]	AM-BH24 0.75-1		✓					
EB1624693-030	[06-Oct-2016]	AM-BH24 1-1.25		✓					
EB1624693-031	[06-Oct-2016]	AM-BH24 1.25-1.5		✓					
EB1624693-032	[06-Oct-2016]	AM-BH24 1.5-1.75		✓					
EB1624693-033	[06-Oct-2016]	AM-BH24 1.75-2		✓					
EB1624693-034	[06-Oct-2016]	AM-BH24 2-2.25		✓					
EB1624693-035	[06-Oct-2016]	AM-BH24 2.25-2.5		✓					
EB1624693-036	[06-Oct-2016]	AM-BH24 2.5-2.75		✓					

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH
EB1624693-037	[06-Oct-2016]	AM-BH24 2.75-3		✓	✓		✓		
EB1624693-038	[06-Oct-2016]	AM-BH24 1.1-1.2	✓						
EB1624693-039	[06-Oct-2016]	AM-BH10 0-0.25		✓					
EB1624693-040	[06-Oct-2016]	AM-BH10 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-041	[06-Oct-2016]	AM-BH10 0.5-0.75		✓					
EB1624693-042	[06-Oct-2016]	AM-BH10 0.75-1		✓					
EB1624693-043	[06-Oct-2016]	AM-BH10 1-1.25		✓					
EB1624693-044	[06-Oct-2016]	AM-BH10 1.25-1.5		✓					
EB1624693-045	[06-Oct-2016]	AM-BH10 1.5-1.75		✓					
EB1624693-046	[06-Oct-2016]	AM-BH10 1.75-2		✓	✓		✓		
EB1624693-047	[06-Oct-2016]	AM-BH10 2-2.25		✓					
EB1624693-048	[06-Oct-2016]	AM-BH10 2.25-2.5		✓					
EB1624693-049	[06-Oct-2016]	AM-BH10 2.5-2.75		✓					
EB1624693-050	[06-Oct-2016]	AM-BH10 2.75-3		✓					
EB1624693-051	[10-Oct-2016]	AM-BH32 0-0.25		✓					
EB1624693-052	[10-Oct-2016]	AM-BH32 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-053	[10-Oct-2016]	AM-BH32 0.5-0.75		✓					
EB1624693-054	[10-Oct-2016]	AM-BH32 0.75-1		✓					
EB1624693-055	[10-Oct-2016]	AM-BH32 1-1.25		✓					
EB1624693-056	[10-Oct-2016]	AM-BH32 1.25-1.5		✓					
EB1624693-057	[10-Oct-2016]	AM-BH32 1.5-1.75		✓					
EB1624693-058	[10-Oct-2016]	AM-BH32 1.75-2		✓					
EB1624693-059	[10-Oct-2016]	AM-BH32 2-2.25		✓					
EB1624693-060	[10-Oct-2016]	AM-BH32 2.25-2.5		✓					
EB1624693-061	[10-Oct-2016]	AM-BH32 2.5-2.75		✓					
EB1624693-062	[10-Oct-2016]	AM-BH32 2.75-3		✓	✓		✓		
EB1624693-063	[07-Oct-2016]	AM-BH29 0-0.25		✓					
EB1624693-064	[07-Oct-2016]	AM-BH29 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-065	[07-Oct-2016]	AM-BH29 0.5-0.75		✓					
EB1624693-066	[07-Oct-2016]	AM-BH29 0.75-1		✓					
EB1624693-067	[07-Oct-2016]	AM-BH29 1-1.25		✓					
EB1624693-068	[07-Oct-2016]	AM-BH29 1.25-1.5		✓					
EB1624693-069	[07-Oct-2016]	AM-BH29 1.5-1.75		✓					
EB1624693-070	[07-Oct-2016]	AM-BH29 1.75-2		✓	✓		✓		
EB1624693-071	[07-Oct-2016]	AM-BH29 2-2.25		✓					
EB1624693-072	[07-Oct-2016]	AM-BH29 2.25-2.5		✓					
EB1624693-073	[07-Oct-2016]	AM-BH29 2.5-2.75		✓					
EB1624693-074	[07-Oct-2016]	AM-BH29 2.75-3		✓					
EB1624693-075	[07-Oct-2016]	AM-BH29 0-0.1			✓			✓	

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG020R-T Total Metals by ICPMS - Suite R
EB1624693-075	[07-Oct-2016]	AM-BH29 0-0.1	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au

SERENA CURTI

- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1624693**	Page	: 1 of 78
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016 16:00
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 21-Oct-2016 17:01
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 74		
No. of samples analysed	: 73		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005T (Total Metals): Sample EB1624693-002 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.1	8.2	7.8	7.5	7.3
ø pH (Fox)	----	0.1	pH Unit	4.8	6.3	5.8	5.5	5.4
ø Reaction Rate	----	1	-	2	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	4.7	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	211	----	----	----
Copper	7440-50-8	5	mg/kg	----	70	----	----	----
Lead	7439-92-1	5	mg/kg	----	<5	----	----	----
Nickel	7440-02-0	2	mg/kg	----	82	----	----	----
Zinc	7440-66-6	5	mg/kg	----	32	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	101	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	84.9	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	108	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	107	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	104	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	114	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	121	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	123	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	111	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	111	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	124	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	99.8	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	6.8	7.8	5.0	6.5
ø pH (Fox)	----	0.1	pH Unit	5.4	4.2	2.9	3.0	4.8
ø Reaction Rate	----	1	-	3	3	3	3	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.6	7.0	4.7	4.3
ø pH (Fox)	----	0.1	pH Unit	5.3	5.8	3.6	2.9	2.8
ø Reaction Rate	----	1	-	2	2	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.2	----	24.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	14	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	65	----
Copper	7440-50-8	5	mg/kg	----	----	----	15	----
Lead	7439-92-1	5	mg/kg	----	----	----	10	----
Nickel	7440-02-0	2	mg/kg	----	----	----	18	----
Zinc	7440-66-6	5	mg/kg	----	----	----	61	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	108	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	97.3	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	105	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	108	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	104	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	114	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	116	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	121	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	81.8	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	94.5	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	117	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	99.1	----	93.4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.3	4.1	4.0	4.2	4.3
ø pH (Fox)	----	0.1	pH Unit	2.7	2.6	2.3	2.6	2.7
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	27.7
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	92.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.5	4.8	4.7	5.2	7.0
ø pH (Fox)	----	0.1	pH Unit	2.7	3.0	2.9	3.2	4.4
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	9.1	8.0	7.6	7.6	6.8
ø pH (Fox)	----	0.1	pH Unit	9.0	7.1	3.4	5.4	2.7
ø Reaction Rate	----	1	-	4	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	5.7	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	214	----	----	----	----
Copper	7440-50-8	5	mg/kg	80	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Nickel	7440-02-0	2	mg/kg	82	----	----	----	----
Zinc	7440-66-6	5	mg/kg	38	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**100**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**92.7**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**101**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**103**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**98.9**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**109**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**110**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**117**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**110**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**106**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**120**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**89.7**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.6	5.0	5.4	5.2	5.8
ø pH (Fox)	----	0.1	pH Unit	2.9	3.0	2.7	3.0	3.5
ø Reaction Rate	----	1	-	3	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	8.0	7.2	7.8	7.7
ø pH (Fox)	----	0.1	pH Unit	5.1	4.1	1.7	2.9	2.7
ø Reaction Rate	----	1	-	3	3	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	24.5	----	43.4	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	33	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	----	----	49	----	----
Copper	7440-50-8	5	mg/kg	----	----	31	----	----
Lead	7439-92-1	5	mg/kg	----	----	60	----	----
Nickel	7440-02-0	2	mg/kg	----	----	33	----	----
Zinc	7440-66-6	5	mg/kg	----	----	242	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	108	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	96.8	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	84.2	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	86.2	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	84.8	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	92.1	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	92.6	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	98.2	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	107	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	108	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	124	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	99.5	----	86.4	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.8	7.8	7.5	7.6	7.6
ø pH (Fox)	----	0.1	pH Unit	2.8	1.7	1.7	1.8	1.6
ø Reaction Rate	----	1	-	3	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	43.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	105	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.7	7.4	7.6	4.4	4.7
ø pH (Fox)	----	0.1	pH Unit	1.6	1.4	1.8	2.6	2.8
ø Reaction Rate	----	1	-	4	4	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	15.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	14
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	<1
Chromium	7440-47-3	2	mg/kg	----	----	----	----	65
Copper	7440-50-8	5	mg/kg	----	----	----	----	18
Lead	7439-92-1	5	mg/kg	----	----	----	----	12
Nickel	7440-02-0	2	mg/kg	----	----	----	----	16
Zinc	7440-66-6	5	mg/kg	----	----	----	----	44
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	<0.05
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	**110**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	**99.2**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	**107**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	**110**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	**111**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	**117**
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	**119**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	**125**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	**101**
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	**100**
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	**119**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	**89.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.6	4.9	5.2	5.0	5.9
ø pH (Fox)	----	0.1	pH Unit	2.6	2.2	1.4	1.6	1.6
ø Reaction Rate	----	1	-	3	3	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.6	6.6	6.8	7.1	7.1
ø pH (Fox)	----	0.1	pH Unit	1.5	1.6	1.6	1.8	1.9
ø Reaction Rate	----	1	-	4	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	27.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	**0.0002**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	**0.0002**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	**0.0002**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	**0.0002**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	**100**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.2	7.9	5.9	4.5	4.1
ø pH (Fox)	----	0.1	pH Unit	6.2	5.3	3.7	2.8	2.4
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	17.8	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	8	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	51	----	----	----
Copper	7440-50-8	5	mg/kg	----	19	----	----	----
Lead	7439-92-1	5	mg/kg	----	9	----	----	----
Nickel	7440-02-0	2	mg/kg	----	38	----	----	----
Zinc	7440-66-6	5	mg/kg	----	47	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	**103**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	**87.0**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	**106**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	**104**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	**105**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	**114**	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	**117**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	**121**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	**106**	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	**104**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	**122**	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	**92.5**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.3	5.9	6.2	6.4	6.6
ø pH (Fox)	----	0.1	pH Unit	2.6	3.5	3.6	3.8	3.7
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	25.8	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	<0.0002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	<0.0002	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	<0.0002	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	112	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.2	7.5	----	----	----
ø pH (Fox)	----	0.1	pH Unit	2.1	2.4	----	----	----
ø Reaction Rate	----	1	-	3	4	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	15.6	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	7	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	----	----	42	----	----
Copper	7440-50-8	5	mg/kg	----	----	17	----	----
Lead	7439-92-1	5	mg/kg	----	----	9	----	----
Nickel	7440-02-0	2	mg/kg	----	----	27	----	----
Zinc	7440-66-6	5	mg/kg	----	----	41	----	----
Titanium	7440-32-6	10	mg/kg	----	----	250	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	1.8	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	138
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	23	135
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	155
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	157
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1624693**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 21-Oct-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 74		
No. of samples analysed	: 73		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA037: Ass Field Screening Analysis (QC Lot: 620369)									
EB1624693-001	AM-BH26 0-0.25	EA037: pH (F)	----	0.1	pH Unit	7.1	7.2	1.40	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.8	4.9	2.06	0% - 20%
EB1624693-011	AM-BH26 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	7.4	7.3	1.36	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.3	5.3	0.00	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620370)									
EB1624693-022	AM-BH18 2-2.25	EA037: pH (F)	----	0.1	pH Unit	4.5	4.4	2.25	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.7	2.8	3.64	0% - 20%
EB1624693-032	AM-BH24 1.5-1.75	EA037: pH (F)	----	0.1	pH Unit	5.6	5.6	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.9	2.8	3.51	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620371)									
EB1624693-043	AM-BH10 1-1.25	EA037: pH (F)	----	0.1	pH Unit	7.8	7.8	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.8	2.9	3.51	0% - 20%
EB1624693-053	AM-BH32 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	4.6	4.6	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.6	2.5	3.92	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620372)									
EB1624693-063	AM-BH29 0-0.25	EA037: pH (F)	----	0.1	pH Unit	8.2	8.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	6.2	6.0	3.28	0% - 20%
EB1624693-073	AM-BH29 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	7.2	7.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.1	2.0	4.88	0% - 20%
EA055: Moisture Content (QC Lot: 620270)									
EB1624687-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	18.0	17.6	2.31	0% - 50%
EB1624766-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.0	9.8	1.20	No Limit
EA055: Moisture Content (QC Lot: 624690)									
EB1623981-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	4.8	4.6	4.61	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 624690) - continued									
EB1623981-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	25.5	26.2	2.67	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 620694)									
EB1624766-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	9	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	11	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	6	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	13	23.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	33	34	0.00	No Limit
EB1624693-002	AM-BH26 0.25-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	211	# 264	22.2	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	82	99	19.1	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	70	86	21.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	40	21.2	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 620696)									
EB1624693-075	AM-BH29 0-0.1	EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	1.8	2.2	20.8	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 620695)									
EB1624778-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1624693-002	AM-BH26 0.25-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620261)									
EB1624693-002	AM-BH26 0.25-0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620261) - continued									
EB1624693-002	AM-BH26 0.25-0.5	EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 620262)									
EB1624693-002	AM-BH26 0.25-0.5	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 620262)									
EB1624693-002	AM-BH26 0.25-0.5	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620263)									
EB1624693-002	AM-BH26 0.25-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 621845) - continued									
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 621845) - continued									
EB1624693-064	AM-BH29 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620694)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	113	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	103	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	111	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	93.3	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	103	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	102	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	109	87	127
EG020T: Total Metals by ICP-MS (QCLot: 620696)								
EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	<0.5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620695)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	99.7	78	122
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	82.8	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	79.9	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	77.2	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	72.4	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.2	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	94.1	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.5	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.7	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	83.7	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	76.3	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.0	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	70.9	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	91.4	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	55	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261) - continued								
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	104	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620262)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	97.4	47	112
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	106	55	108
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620262)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	93.1	46	115
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	109	53	113
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620263)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	89.5	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	101	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	90.5	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	96.8	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	81.3	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	90.7	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	101	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	99.4	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	90.9	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	98.6	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	84.3	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	82.4	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	69.0	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	65.9	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	73.7	64	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	85.1	66	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620268)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	82.7	66	119
EP080: BTEXN (QCLot: 620268)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	82.6	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	98.7	73	105

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP080: BTEXN (QCLot: 620268) - continued								
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	97.6	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	102	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	101	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	97.2	72	115
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 621845)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	67.8	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.3	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.8	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.7	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.8	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	64.8	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 621845)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00125 mg/kg	94.7	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.8	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	121	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.6	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.6	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	63.0	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.1	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 621845)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.6	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.4	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.6	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	86.3	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	68.2	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.3	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	107	61	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	102	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	109	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EG005T: Total Metals by ICP-AES (QCLot: 620694)							
EB1624693-015	AM-BH18 0.25-0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	103	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	110	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	110	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	101	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	108	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	116	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	103	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620695)							
EB1624693-015	AM-BH18 0.25-0.5	EG035T: Mercury	7439-97-6	2.5 mg/kg	93.7	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261)							
EB1624693-015	AM-BH18 0.25-0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	95.1	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	110	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	106	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	102	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	93.1	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	85.2	70	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620262)							
EB1624693-015	AM-BH18 0.25-0.5	EP071SG-S: C10 - C14 Fraction	----	318 mg/kg	97.2	47	130
		EP071SG-S: C15 - C28 Fraction	----	531 mg/kg	104	55	130
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620262)							
EB1624693-015	AM-BH18 0.25-0.5	EP071SG-S: >C10 - C16 Fraction	----	428 mg/kg	91.6	46	130
		EP071SG-S: >C16 - C34 Fraction	----	395 mg/kg	108	53	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620263)							
EB1624693-015	AM-BH18 0.25-0.5	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	103	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	114	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268) - continued							
EB1624693-015	AM-BH18 0.25-0.5	EP080: C6 - C9 Fraction	----	8 mg/kg	91.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620268)							
EB1624693-015	AM-BH18 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	91.8	70	130
EP080: BTEXN (QCLot: 620268)							
EB1624693-015	AM-BH18 0.25-0.5	EP080: Benzene	71-43-2	2 mg/kg	73.0	70	130
		EP080: Toluene	108-88-3	2 mg/kg	77.2	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	52.5	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	62.8	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	74.7	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	75.0	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	90.2	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.00125 mg/kg	82.4	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00125 mg/kg	91.2	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	55.5	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	80.0	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	100.0	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	77.1	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	96.7	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	106	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.8	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	101	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	103	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	75.0	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	95.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	85.6	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	73.3	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.00312 mg/kg	51.5	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	47.2	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	117	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	88.6	30	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	98.8	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	66.0	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	112	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	111	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1624693**	Page	: 1 of 9
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Site	: Brisbane Airport	Issue Date	: 21-Oct-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 74
Order number	: 1538021	No. of samples analysed	: 73

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB1624693--002	AM-BH26 0.25-0.5	**Chromium**	7440-47-3	22.2 %	0% - 20%	**RPD exceeds LOR based limits**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH26 0-0.25,	AM-BH26 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	04-Apr-2017	✓	**18-Oct-2016**	04-Apr-2017	✓
AM-BH26 0.5-0.75,	AM-BH26 0.75-1,							
AM-BH26 1-1.25,	AM-BH26 1.25-1.5,							
AM-BH26 1.5-1.75,	AM-BH26 1.75-2,							
AM-BH26 2-2.25,	AM-BH26 2.25-2.5,							
AM-BH26 2.5-2.75,	AM-BH26 2.75-3,							
AM-BH18 0-0.25,	AM-BH18 0.25-0.5,							
AM-BH18 0.5-0.75,	AM-BH18 0.75-1,							
AM-BH18 1-1.25,	AM-BH18 1.25-1.5,							
AM-BH18 1.5-1.75,	AM-BH18 1.75-2,							
AM-BH18 2-2.25,	AM-BH18 2.25-2.5,							
AM-BH18 2.5-2.75,	AM-BH18 2.75-3,							
AM-BH24 0-0.25,	AM-BH24 0.25-0.5,							
AM-BH24 0.5-0.75,	AM-BH24 0.75-1,							
AM-BH24 1-1.25,	AM-BH24 1.25-1.5,							
AM-BH24 1.5-1.75,	AM-BH24 1.75-2,							
AM-BH24 2-2.25,	AM-BH24 2.25-2.5,							
AM-BH24 2.5-2.75,	AM-BH24 2.75-3,							
AM-BH10 0-0.25,	AM-BH10 0.25-0.5,							
AM-BH10 0.5-0.75,	AM-BH10 0.75-1,							
AM-BH10 1-1.25,	AM-BH10 1.25-1.5,							
AM-BH10 1.5-1.75,	AM-BH10 1.75-2,							
AM-BH10 2-2.25,	AM-BH10 2.25-2.5,							
AM-BH10 2.5-2.75,	AM-BH10 2.75-3							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis - Continued								
Snap Lock Bag - frozen (EA037)								
AM-BH29 0-0.25,	AM-BH29 0.25-0.5,	**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓
AM-BH29 0.5-0.75,	AM-BH29 0.75-1,							
AM-BH29 1-1.25,	AM-BH29 1.25-1.5,							
AM-BH29 1.5-1.75,	AM-BH29 1.75-2,							
AM-BH29 2-2.25,	AM-BH29 2.25-2.5,							
AM-BH29 2.5-2.75,	AM-BH29 2.75-3							
Snap Lock Bag - frozen (EA037)								
AM-BH32 0-0.25,	AM-BH32 0.25-0.5,	**10-Oct-2016**	**18-Oct-2016**	08-Apr-2017	✓	**18-Oct-2016**	08-Apr-2017	✓
AM-BH32 0.5-0.75,	AM-BH32 0.75-1,							
AM-BH32 1-1.25,	AM-BH32 1.25-1.5,							
AM-BH32 1.5-1.75,	AM-BH32 1.75-2,							
AM-BH32 2-2.25,	AM-BH32 2.25-2.5,							
AM-BH32 2.5-2.75,	AM-BH32 2.75-3							
EA055: Moisture Content								
Snap Lock Bag - frozen (EA055-103)								
AM-BH26 2.75-3,	AM-BH18 1.75-2,	**06-Oct-2016**	**----**	----	----	**20-Oct-2016**	20-Oct-2016	✓
AM-BH24 2.75-3,	AM-BH10 1.75-2							
Snap Lock Bag - frozen (EA055-103)								
AM-BH29 1.75-2		**07-Oct-2016**	**----**	----	----	**20-Oct-2016**	21-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103)								
AM-BH32 2.75-3		**10-Oct-2016**	**----**	----	----	**20-Oct-2016**	24-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**----**	----	----	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH29 0.25-0.5,	AM-BH29 0-0.1	**07-Oct-2016**	**----**	----	----	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**----**	----	----	**18-Oct-2016**	24-Oct-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	04-Apr-2017	✓	**18-Oct-2016**	04-Apr-2017	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH29 0.25-0.5,	AM-BH29 0-0.1	**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	08-Apr-2017	✓	**18-Oct-2016**	08-Apr-2017	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020R-T)								
AM-BH29 0-0.1		**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	03-Nov-2016	✓	**19-Oct-2016**	03-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T) AM-BH29 0.25-0.5, AM-BH29 0-0.1	**07-Oct-2016**	**18-Oct-2016**	04-Nov-2016	✓	**19-Oct-2016**	04-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	07-Nov-2016	✓	**19-Oct-2016**	07-Nov-2016	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup							
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup							
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	8	72	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite R	EG020R-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020. Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

Preparation Methods	Method	Matrix	Method Descriptions
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab. Name:	ALS Environmental
Sampler By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐	EMAIL ☑ BULLETIN BOARD ☐	
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre: scurti@golder.com.au	

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147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Golder Associates
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
1	AM-BH13	0	0.25	soil	6/10/2016		bag		1	N		X	X			
2	AM-BH13	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
3	AM-BH13	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
4	AM-BH13	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
5	AM-BH13	1	1.25	soil	6/10/2016		bag		1	N		X	X			
6	AM-BH13	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
7	AM-BH13	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
8	AM-BH13	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
9	AM-BH13	2	2.25	soil	6/10/2016		bag		1	N		X	X			
10	AM-BH13	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
11	AM-BH13	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
12	AM-BH13	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			X

Environmental Division
Brisbane
Work Order Reference
EB1624749

Telephone : + 61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

TYPE OF SEAL & ORDER Analytical Laboratory LAB BATCH NUMBER

Security Seal Chilled Bill to:

Sample Container Frozen Address

Cool Box Ambient

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORAT

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project No:	1538021	Order/Job No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
13	AM-BH14	0	0.25	soil	6/10/2016		bag		1	N		X	X			
14	AM-BH14	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
15	AM-BH14	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
16	AM-BH14	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
17	AM-BH14	1	1.25	soil	6/10/2016		bag		1	N		X	X			X
18	AM-BH14	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
19	AM-BH14	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
20	AM-BH14	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
21	AM-BH14	2	2.25	soil	6/10/2016		bag		1	N		X	X			
22	AM-BH14	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
23	AM-BH14	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
24	AM-BH14	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRES	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Billed	
Suitable Containers		Frozen		Advised	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project No:	1538021	Order/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Phone: (07) 3721 5400
Fax: (07) 3721 5401
Golder Associates

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
25	AM-BH15	0	0.25	soil	7/10/2016		bag		1	N		X	X						
26	AM-BH15	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
27	AM-BH15	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
28	AM-BH15	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
29	AM-BH15	1	1.25	soil	7/10/2016		bag		1	N		X	X						
30	AM-BH15	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
31	AM-BH15	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
32	AM-BH15	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X			X			
33	AM-BH15	2	2.25	soil	7/10/2016		bag		1	N		X	X						
34	AM-BH15	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
35	AM-BH15	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
36	AM-BH15	2.75	3	soil	7/10/2016		bag+jar		2	N		X	X						
37	AM-BH15	0	0.1	soil	7/10/2016		jar		1	N							X	X	X
38	QAQC005			soil	7/10/2016		jar		1	N				X.	X	X			
	QAQC006			soil	7/10/2016		jar		1	N		PLEASE SHIP TO EUROFINS							
39	QAQC007			soil	7/10/2016		jar		1	N	X								
40	QAQC008			soil	7/10/2016		jar		1	N	X								

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analyzing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled	Bill to:	
Suitable Containers		Frozen	Address	
Cool Box		Ambient		

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Sub/Order No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
41	AM-BH16	0	0.25	soil	7/10/2016		bag		1	N		X	X						
42	AM-BH16	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
43	AM-BH16	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
44	AM-BH16	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
45	AM-BH16	1	1.25	soil	7/10/2016		bag		1	N		X	X						
46	AM-BH16	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
47	AM-BH16	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
48	AM-BH16	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X						
49	AM-BH16	2	2.25	soil	7/10/2016		bag		1	N		X	X						
50	AM-BH16	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
51	AM-BH16	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
52	AM-BH16	2.75	3	soil	7/10/2016		bag+jar		2	N		X'	X			X			
53	AM-BH16	0	0.1	soil	7/10/2016		jar		1	N							X	X	X
54	QAQC001			soil	7/10/2016		jar		2	N				X	X	X			
	QAQC002			soil	7/10/2016		jar		2	N	PLEASE SHIP TO EUROFINS								
55	QAQC003			soil	7/10/2016		jar		1	N	X								
56	QAQC004			soil	7/10/2016		jar		1	N	X								

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved: J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal: Chilled
Suitable Containers: Frozen
Cool Box: Ambient

LAB BATCH NUMBER
Billed:
Address:

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Order/Quote No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters	EP075B - PAHs
54	AM-BH25	0	0.25	soil			bag		1	N		X	X				
55	AM-BH25	0.25	0.5	soil			bag+ 2 jars		3	N		X	X	X	X	X	
56	AM-BH25	0.5	0.75	soil			bag		1	N		X	X				
60	AM-BH25	1.5	1.75	soil			bag		2	N		X	X				
61	AM-BH25	1.75	2	soil			bag+jar		1	N		X	X				
62	AM-BH25	2	2.25	soil			bag		1	N		X	X				
63	AM-BH25	2.25	2.5	soil			bag		1	N		X	X				
64	AM-BH25	2.5	2.75	soil			bag		2	N		X	X				
65	AM-BH25	2.75	3	soil			bag+jar		1	N		X	X			X	
66	AM-BH25	0.5	0.6	soil			jar		1	N							X

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

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	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Bilton	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Project ID:	1538021	Order Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Golder Associates

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ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
AM-BH30	0	0.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
AM-BH30	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			X
AM-BH30	1	1.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			
AM-BH30	2	2.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.75	3	soil	10/10/2016		jar		1	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER		
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Bill to	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
79	AM-BH31	0	0.25	soil	10/10/2016		bag		1	N		X	X			
80	AM-BH31	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
81	AM-BH31	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
82	AM-BH31	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			
83	AM-BH31	1	1.25	soil	10/10/2016		bag		1	N		X	X			
84	AM-BH31	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
85	AM-BH31	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
86	AM-BH31	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			X
87	AM-BH31	2	2.25	soil	10/10/2016		bag		1	N		X	X			
88	AM-BH31	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
89	AM-BH31	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
90	AM-BH31	2.75	3	soil	10/10/2016		bag+jar		2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CURTIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled		Bill to	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1624749**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 5
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 14-Oct-2016 4:00 PM	Issue Date	: 18-Oct-2016
Client Requested Due Date	: 21-Oct-2016	Scheduled Reporting Date	: **21-Oct-2016**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 1.5, 1.2, 1.7°C
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 90 / 85

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **As only a soil jar suitable for PFAS testing was received for "AM-BH30 2.75-3" (ALS #78), pH Field and Fox (EA037) will not be tested on this sample.**
- **Samples "QAQC006" and "QAQC002" will be forwarded to Eurofins, as requested.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The estimated due date for this data is the 25/10/16.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Please be advised that a soil jar for PFAS testing was not received for "AM-BH14 1-1.25" (ALS #17), however one was received for "AM-BH14 0.75-1" (ALS #16). PFAS testing has been assigned to ALS #16, however if testing for this is not required on this sample, please contact ALS Client Services at ALSEnviro.Brisbane@alsglobal.com , ASAP.**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-001	[06-Oct-2016]	AM-BH13 0-0.25	✓						
EB1624749-002	[06-Oct-2016]	AM-BH13 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-003	[06-Oct-2016]	AM-BH13 0.5-0.75	✓						
EB1624749-004	[06-Oct-2016]	AM-BH13 0.75-1	✓						
EB1624749-005	[06-Oct-2016]	AM-BH13 1-1.25	✓						
EB1624749-006	[06-Oct-2016]	AM-BH13 1.25-1.5	✓						
EB1624749-007	[06-Oct-2016]	AM-BH13 1.5-1.75	✓						
EB1624749-008	[06-Oct-2016]	AM-BH13 1.75-2	✓						
EB1624749-009	[06-Oct-2016]	AM-BH13 2-2.25	✓						
EB1624749-010	[06-Oct-2016]	AM-BH13 2.25-2.5	✓						
EB1624749-011	[06-Oct-2016]	AM-BH13 2.5-2.75	✓						
EB1624749-012	[06-Oct-2016]	AM-BH13 2.75-3	✓	✓		✓			
EB1624749-013	[06-Oct-2016]	AM-BH14 0-0.25	✓						
EB1624749-014	[06-Oct-2016]	AM-BH14 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-015	[06-Oct-2016]	AM-BH14 0.5-0.75	✓						
EB1624749-016	[06-Oct-2016]	AM-BH14 0.75-1	✓	✓		✓			
EB1624749-017	[06-Oct-2016]	AM-BH14 1-1.25	✓						
EB1624749-018	[06-Oct-2016]	AM-BH14 1.25-1.5	✓						
EB1624749-019	[06-Oct-2016]	AM-BH14 1.5-1.75	✓						
EB1624749-020	[06-Oct-2016]	AM-BH14 1.75-2	✓						
EB1624749-021	[06-Oct-2016]	AM-BH14 2-2.25	✓						
EB1624749-022	[06-Oct-2016]	AM-BH14 2.25-2.5	✓						
EB1624749-023	[06-Oct-2016]	AM-BH14 2.5-2.75	✓						
EB1624749-024	[06-Oct-2016]	AM-BH14 2.75-3	✓						
EB1624749-025	[07-Oct-2016]	AM-BH15 0-0.25	✓						
EB1624749-026	[07-Oct-2016]	AM-BH15 0.25-0.5	✓	✓		✓	✓		✓
EB1624749-027	[07-Oct-2016]	AM-BH15 0.5-0.75	✓						
EB1624749-028	[07-Oct-2016]	AM-BH15 0.75-1	✓						
EB1624749-029	[07-Oct-2016]	AM-BH15 1-1.25	✓						
EB1624749-030	[07-Oct-2016]	AM-BH15 1.25-1.5	✓						
EB1624749-031	[07-Oct-2016]	AM-BH15 1.5-1.75	✓						
EB1624749-032	[07-Oct-2016]	AM-BH15 1.75-2	✓	✓		✓			
EB1624749-033	[07-Oct-2016]	AM-BH15 2-2.25	✓						
EB1624749-034	[07-Oct-2016]	AM-BH15 2.25-2.5	✓						
EB1624749-035	[07-Oct-2016]	AM-BH15 2.5-2.75	✓						

			SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-036	[07-Oct-2016]	AM-BH15 2.75-3	✓						
EB1624749-037	[07-Oct-2016]	AM-BH15 0-0.1		✓					
EB1624749-038	[07-Oct-2016]	QAQC005		✓		✓	✓		✓
EB1624749-041	[07-Oct-2016]	AM-BH16 0-0.25	✓						
EB1624749-042	[07-Oct-2016]	AM-BH16 0.25-0.5	✓	✓		✓	✓		✓
EB1624749-043	[07-Oct-2016]	AM-BH16 0.5-0.75	✓						
EB1624749-044	[07-Oct-2016]	AM-BH16 0.75-1	✓						
EB1624749-045	[07-Oct-2016]	AM-BH16 1-1.25	✓						
EB1624749-046	[07-Oct-2016]	AM-BH16 1.25-1.5	✓						
EB1624749-047	[07-Oct-2016]	AM-BH16 1.5-1.75	✓						
EB1624749-048	[07-Oct-2016]	AM-BH16 1.75-2	✓						
EB1624749-049	[07-Oct-2016]	AM-BH16 2-2.25	✓						
EB1624749-050	[07-Oct-2016]	AM-BH16 2.25-2.5	✓						
EB1624749-051	[07-Oct-2016]	AM-BH16 2.5-2.75	✓						
EB1624749-052	[07-Oct-2016]	AM-BH16 2.75-3	✓	✓		✓			
EB1624749-053	[07-Oct-2016]	AM-BH16 0-0.1		✓					
EB1624749-054	[07-Oct-2016]	QAQC001		✓		✓	✓		✓
EB1624749-057	[07-Oct-2016]	AM-BH25 0-0.25	✓						
EB1624749-058	[07-Oct-2016]	AM-BH25 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-059	[07-Oct-2016]	AM-BH25 0.5-0.75	✓						
EB1624749-060	[07-Oct-2016]	AM-BH25 1.5-1.75	✓						
EB1624749-061	[07-Oct-2016]	AM-BH25 1.75-2	✓						
EB1624749-062	[07-Oct-2016]	AM-BH25 2-2.25	✓						
EB1624749-063	[07-Oct-2016]	AM-BH25 2.25-2.5	✓						
EB1624749-064	[07-Oct-2016]	AM-BH25 2.5-2.75	✓						
EB1624749-065	[07-Oct-2016]	AM-BH25 2.75-3	✓	✓		✓			
EB1624749-066	[07-Oct-2016]	AM-BH25 0.5-0.6		✓					
EB1624749-067	[10-Oct-2016]	AM-BH30 0-0.25	✓						
EB1624749-068	[10-Oct-2016]	AM-BH30 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-069	[10-Oct-2016]	AM-BH30 0.5-0.75	✓						
EB1624749-070	[10-Oct-2016]	AM-BH30 0.75-1	✓	✓		✓			
EB1624749-071	[10-Oct-2016]	AM-BH30 1-1.25	✓						
EB1624749-072	[10-Oct-2016]	AM-BH30 1.25-1.5	✓						
EB1624749-073	[10-Oct-2016]	AM-BH30 1.5-1.75	✓						
EB1624749-074	[10-Oct-2016]	AM-BH30 1.75-2	✓						
EB1624749-075	[10-Oct-2016]	AM-BH30 2-2.25	✓						
EB1624749-076	[10-Oct-2016]	AM-BH30 2.25-2.5	✓						
EB1624749-077	[10-Oct-2016]	AM-BH30 2.5-2.75	✓						
EB1624749-079	[10-Oct-2016]	AM-BH31 0-0.25	✓						
EB1624749-080	[10-Oct-2016]	AM-BH31 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-081	[10-Oct-2016]	AM-BH31 0.5-0.75	✓						

			SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-082	[10-Oct-2016]	AM-BH31 0.75-1	✓						
EB1624749-083	[10-Oct-2016]	AM-BH31 1-1.25	✓						
EB1624749-084	[10-Oct-2016]	AM-BH31 1.25-1.5	✓						
EB1624749-085	[10-Oct-2016]	AM-BH31 1.5-1.75	✓						
EB1624749-086	[10-Oct-2016]	AM-BH31 1.75-2	✓	✓		✓			
EB1624749-087	[10-Oct-2016]	AM-BH31 2-2.25	✓						
EB1624749-088	[10-Oct-2016]	AM-BH31 2.25-2.5	✓						
EB1624749-089	[10-Oct-2016]	AM-BH31 2.5-2.75	✓						
EB1624749-090	[10-Oct-2016]	AM-BH31 2.75-3	✓						

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	(On Hold) SOIL No analysis requested	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG020T (solids) Total Metals by ICP-MS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-02 8 Metals (incl. Digestion)
EB1624749-037	[07-Oct-2016]	AM-BH15 0-0.1		✓	✓		✓
EB1624749-039	[07-Oct-2016]	QAQC007	✓				
EB1624749-040	[07-Oct-2016]	QAQC008	✓				
EB1624749-053	[07-Oct-2016]	AM-BH16 0-0.1		✓	✓		✓
EB1624749-055	[07-Oct-2016]	QAQC003	✓				
EB1624749-056	[07-Oct-2016]	QAQC004	✓				
EB1624749-066	[07-Oct-2016]	AM-BH25 0.5-0.6				✓	
EB1624749-078	[10-Oct-2016]	AM-BH30 2.75-3	✓				

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au

SERENA CURTI

- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1624749**	Page	: 1 of 105
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016 16:00
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 25-Oct-2016 13:16
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 90		
No. of samples analysed	: 85		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Matt Frost	Senior Organic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005T (Total Metals): Sample EB1624685-033 shows poor matrix spike recovery due to sample heterogeneity. Confirmed by visual inspection.
- EG035T (Total Mercury): Sample EB1624685-033 shows poor spike recovery due to sample heterogeneity. Confirmed by visual inspection
- EP068 Pesticides: Sample 'AM-BH14 0.25-0.5' shows poor matrix spike recovery for 4,4/ due to matrix interference. Confirmed by re-extraction and re-analysis.
- EP068 Pesticides: High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- EP075(SIM): High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.6	7.6	6.9	7.1
ø pH (Fox)	----	0.1	pH Unit	5.2	5.6	5.7	5.2	4.4
ø Reaction Rate	----	1	-	1	2	2	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	9.8	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	7	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	9	----	----	----
Copper	7440-50-8	5	mg/kg	----	23	----	----	----
Lead	7439-92-1	5	mg/kg	----	14	----	----	----
Nickel	7440-02-0	2	mg/kg	----	9	----	----	----
Zinc	7440-66-6	5	mg/kg	----	30	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	114	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	102	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	122	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	118	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	100	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	121	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	113	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	132	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	99.4	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	84.9	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	88.2	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	93.7	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.8	5.9	5.0	5.7
ø pH (Fox)	----	0.1	pH Unit	4.2	4.4	3.0	3.4	3.3
ø Reaction Rate	----	1	-	3	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.7	6.5	7.0	7.8	5.9
ø pH (Fox)	----	0.1	pH Unit	3.4	4.8	4.7	6.0	2.7
ø Reaction Rate	----	1	-	2	2	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.2	----	11.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	8	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	21	----
Copper	7440-50-8	5	mg/kg	----	----	----	24	----
Lead	7439-92-1	5	mg/kg	----	----	----	13	----
Nickel	7440-02-0	2	mg/kg	----	----	----	14	----
Zinc	7440-66-6	5	mg/kg	----	----	----	40	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	**119**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	**112**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	**116**	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	**109**	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	**95.1**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	**116**	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	**108**	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	**132**	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	**94.1**	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	**79.3**	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	**92.0**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	**96.0**	----	**104**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.3	5.2	8.0	5.5	5.7
ø pH (Fox)	----	0.1	pH Unit	2.4	2.5	3.2	2.9	3.0
ø Reaction Rate	----	1	-	4	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	6.8	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**90.5**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	7.2	7.2	7.3	7.0
ø pH (Fox)	----	0.1	pH Unit	5.0	5.6	5.7	5.7	1.8
ø Reaction Rate	----	1	-	2	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.0	6.5	7.2	7.0	7.3
ø pH (Fox)	----	0.1	pH Unit	5.4	4.4	5.0	4.8	4.8
ø Reaction Rate	----	1	-	3	2	3	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	23.9	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	14	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	41	----	----	----	----
Copper	7440-50-8	5	mg/kg	22	----	----	----	----
Lead	7439-92-1	5	mg/kg	10	----	----	----	----
Nickel	7440-02-0	2	mg/kg	39	----	----	----	----
Zinc	7440-66-6	5	mg/kg	90	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**113**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**106**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**108**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**105**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**102**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**103**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**110**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**123**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**99.0**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**89.6**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**97.4**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**96.0**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.1	6.9	6.9	7.0	7.0
ø pH (Fox)	----	0.1	pH Unit	4.6	4.4	4.2	4.4	2.5
ø Reaction Rate	----	1	-	3	3	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.4	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	94.3	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.3	----	----	7.2	6.3
ø pH (Fox)	----	0.1	pH Unit	2.5	----	----	3.1	4.3
ø Reaction Rate	----	1	-	4	----	----	3	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	16.8	23.4	----	24.2
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	8	13	----	<5
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg	----	46	39	----	55
Copper	7440-50-8	5	mg/kg	----	34	31	----	20
Lead	7439-92-1	5	mg/kg	----	10	17	----	6
Nickel	7440-02-0	2	mg/kg	----	52	59	----	18
Zinc	7440-66-6	5	mg/kg	----	56	236	----	33
Titanium	7440-32-6	10	mg/kg	----	360	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	1.4	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	<0.05	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	<0.2	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Diazinon	333-41-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	<0.05	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	<0.2	----	<0.2
Malathion	121-75-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Fenthion	55-38-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Parathion	56-38-2	0.2	mg/kg	----	----	<0.2	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	----	----	<0.05	----	<0.05
Ethion	563-12-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	<0.05	----	<0.05
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**0.6**	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.2**	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	<10
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	<0.001	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	**112**	----	**116**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	**101**	----	**106**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	**109**	----	**119**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	**103**	----	**110**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	**97.8**	----	**106**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	**104**	----	**103**
Anthracene-d10	1719-06-8	0.5	%	----	----	**104**	----	**113**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	**116**	----	**125**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	**98.0**	----	**110**
Toluene-D8	2037-26-5	0.2	%	----	----	**86.8**	----	**90.0**
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	**95.4**	----	**101**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	**101**	----	**92.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.5	5.3	5.9	6.4	6.7
ø pH (Fox)	----	0.1	pH Unit	2.6	3.2	3.8	3.4	3.5
ø Reaction Rate	----	1	-	2	2	2	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.3	6.2	6.5	6.4	7.1
ø pH (Fox)	----	0.1	pH Unit	3.7	3.6	3.3	1.7	2.2
ø Reaction Rate	----	1	-	3	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	23.9
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	91.6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	6.7	4.3	5.9
ø pH (Fox)	----	0.1	pH Unit	----	----	3.8	4.6	4.0
ø Reaction Rate	----	1	-	----	----	3	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	19.1	23.7	----	11.6	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	11	8	----	10	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	----
Chromium	7440-47-3	2	mg/kg	37	54	----	54	----
Copper	7440-50-8	5	mg/kg	25	30	----	41	----
Lead	7439-92-1	5	mg/kg	17	13	----	15	----
Nickel	7440-02-0	2	mg/kg	18	33	----	31	----
Zinc	7440-66-6	5	mg/kg	65	42	----	44	----
Titanium	7440-32-6	10	mg/kg	340	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	3.0	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	**0.0004**	----	**0.0005**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	**0.0004**	----	**0.0020**	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	0.0008	----	0.0025	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	0.0008	----	0.0025	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	0.0008	----	0.0025	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	115	----	108	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	103	----	98.5	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	119	----	117	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	109	----	108	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	102	----	94.1	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	105	----	116	----
Anthracene-d10	1719-06-8	0.5	%	----	113	----	117	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	132	----	128	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	104	----	93.1	----
Toluene-D8	2037-26-5	0.2	%	----	89.4	----	83.0	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	97.6	----	83.7	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	95.2	----	93.4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.9	6.0	6.1	4.7	5.9
ø pH (Fox)	----	0.1	pH Unit	3.2	3.5	4.1	2.9	4.5
ø Reaction Rate	----	1	-	3	3	3	2	1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.6	----	4.5	3.9	4.2
ø pH (Fox)	----	0.1	pH Unit	5.4	----	2.8	2.2	2.5
ø Reaction Rate	----	1	-	2	----	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	25.2	28.6	----	15.1	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	8	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	39	----
Copper	7440-50-8	5	mg/kg	----	----	----	16	----
Lead	7439-92-1	5	mg/kg	----	----	----	12	----
Nickel	7440-02-0	2	mg/kg	----	----	----	24	----
Zinc	7440-66-6	5	mg/kg	----	----	----	54	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	104	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	98.4	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	113	----	104	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	102	----	97.1	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	106	----	91.9	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	100	----	110	----
Anthracene-d10	1719-06-8	0.5	%	----	111	----	115	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	116	----	122	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	88.7	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	77.2	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	85.4	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	91.5	----	----	86.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.4	6.4	6.8	7.1	7.2
ø pH (Fox)	----	0.1	pH Unit	3.8	4.2	4.0	1.8	1.8
ø Reaction Rate	----	1	-	2	3	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	34.4	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**86.4**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.0	8.1	8.2	5.2	4.2
ø pH (Fox)	----	0.1	pH Unit	2.4	2.0	2.0	3.0	2.4
ø Reaction Rate	----	1	-	4	4	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	17.5
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	19
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	<1
Chromium	7440-47-3	2	mg/kg	----	----	----	----	41
Copper	7440-50-8	5	mg/kg	----	----	----	----	20
Lead	7439-92-1	5	mg/kg	----	----	----	----	13
Nickel	7440-02-0	2	mg/kg	----	----	----	----	41
Zinc	7440-66-6	5	mg/kg	----	----	----	----	63
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	**0.0005**
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	**0.0005**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	**110**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	**100**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	**108**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	**99.3**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	**94.6**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	**113**
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	**118**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	**126**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	**100**
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	**79.5**
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	**94.5**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	**95.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	3.9	5.7	5.1	5.8	6.5
ø pH (Fox)	----	0.1	pH Unit	2.2	3.9	2.5	1.8	1.9
ø Reaction Rate	----	1	-	2	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.0	7.1	7.4	7.8	7.8
ø pH (Fox)	----	0.1	pH Unit	1.8	1.7	1.7	2.0	1.7
ø Reaction Rate	----	1	-	4	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	36.0	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**82.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	138
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	23	135
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	155
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	157
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1624749**	Page	: 1 of 19
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 25-Oct-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 90		
No. of samples analysed	: 85		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Matt Frost	Senior Organic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA037: Ass Field Screening Analysis (QC Lot: 621294)									
EB1624749-001	AM-BH13 0-0.25	EA037: pH (F)	----	0.1	pH Unit	7.4	7.4	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.2	5.1	1.94	0% - 20%
EB1624749-011	AM-BH13 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	5.7	5.5	3.57	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.4	3.5	2.90	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621295)									
EB1624749-021	AM-BH14 2-2.25	EA037: pH (F)	----	0.1	pH Unit	6.8	7.0	2.90	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.0	4.8	4.08	0% - 20%
EB1624749-031	AM-BH15 1.5-1.75	EA037: pH (F)	----	0.1	pH Unit	7.1	7.0	1.42	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.6	4.5	2.20	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621296)									
EB1624749-045	AM-BH16 1-1.25	EA037: pH (F)	----	0.1	pH Unit	5.9	5.8	1.71	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.8	3.8	0.00	0% - 20%
EB1624749-059	AM-BH25 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	5.9	6.0	1.68	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.0	3.9	2.53	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621297)									
EB1624749-070	AM-BH30 0.75-1	EA037: pH (F)	----	0.1	pH Unit	5.4	5.5	1.83	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.8	3.7	2.67	0% - 20%
EB1624749-081	AM-BH31 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	3.9	3.9	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.2	2.3	4.44	0% - 20%
EA055: Moisture Content (QC Lot: 620751)									
EB1624685-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	16.4	16.6	1.12	0% - 50%
EB1624685-023	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	3.8	3.9	0.00	No Limit
EA055: Moisture Content (QC Lot: 620757)									
EB1624749-002	AM-BH13 0.25-0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	9.8	9.6	2.30	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 620766)									
EB1624685-005	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	8.3	8.2	0.00	No Limit
EA055: Moisture Content (QC Lot: 624690)									
EB1623981-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	4.8	4.6	4.61	No Limit
EB1623981-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	25.5	26.2	2.67	0% - 20%
EA055: Moisture Content (QC Lot: 624691)									
EB1624749-052	AM-BH16 2.75-3	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	23.9	23.3	2.31	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 620763)									
EB1624685-032	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	25	25	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	12	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	54	53	0.00	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	31	31	0.00	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	11	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	41	40	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	16	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	44	44	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 620765)									
EB1624749-037	AM-BH15 0-0.1	EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	1.4	1.7	13.2	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 620764)									
EB1624685-032	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620748)									
EB1624685-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	0.08	0.07	14.7	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620748) - continued									
EB1624685-001	Anonymous	EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	0.08	0.07	13.3	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620755)									
EB1624749-002	AM-BH13 0.25-0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620755) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620748)									
EB1624685-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620755)									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620755) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 620754)									
EB1624749-002	AM-BH13 0.25-0.5	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 620754)									
EB1624749-002	AM-BH13 0.25-0.5	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620746)									
EB1624685-023	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EB1624685-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620746) - continued									
EB1624685-001	Anonymous	EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620753)									
EB1624749-002	AM-BH13 0.25-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620747)									
EB1624685-033	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	100	120	15.1	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1624685-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EB1624685-033	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620747)									
EB1624685-033	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	160	190	14.4	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1624685-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EB1624685-033	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EB1624685-033	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 624743) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0005	0.0006	18.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0020	0.0022	12.4	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 624743) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620763)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	93.9	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	102	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	95.9	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	105	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	102	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	109	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	104	87	127
EG020T: Total Metals by ICP-MS (QCLot: 620765)								
EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	<0.5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620764)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	100	78	122
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	101	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	85.1	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.8	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	103	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	102	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	106	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	107	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	100	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	110	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	97.5	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	80.2	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.4	55	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748) - continued								
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	98.1	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 620755)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	# 114	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	99.7	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.1	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	119	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	108	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	116	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	115	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	103	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	113	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	106	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	118	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	113	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.6	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	107	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	121	55	129
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	111	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	99.2	41	114
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	65.7	25	120
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	113	35	135
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	94.8	44	131
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.7	70	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748) - continued								
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	109	70	130
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	80.0	60	122
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	64	125
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	103	69	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.9	66	120
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	102	57	118
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	121	70	130
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	117	62	127
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	106	80	130
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	98.5	55	106
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	101	80	134
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	120	61	123
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	119	57	124
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	46.7	35	127
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620755)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	102	41	114
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	67.2	25	120
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	112	35	135
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	44	131
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	111	70	131
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	107	70	130
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	81.3	60	122
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	105	64	125
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	108	69	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	98.5	66	120
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	102	57	118
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	# 131	70	130
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	123	62	127
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	114	80	130
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	103	55	106
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	107	80	134
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	112	61	123
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	# 126	57	124
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	35.5	35	127
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	61.8	47	112
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	72.0	55	108
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620754)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	65.8	46	115
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	70.9	53	113
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620746)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	101	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	102	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	106	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	104	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	110	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	113	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	112	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	114	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	107	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	110	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	108	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	112	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	85.5	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	91.9	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	88.7	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	106	64	131
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620753)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	111	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	116	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	111	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	112	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	# 122	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	# 127	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	132	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	109	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	# 125	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	110	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	115	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	110	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	113	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	114	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	120	64	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620747)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	82.6	79	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	87.4	77	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620750)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	96.3	66	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620756)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	71.8	66	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620747)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	84.9	81	122
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	83.5	74	122
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620750)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	89.8	66	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620756)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	67.4	66	119
EP080: BTEXN (QCLot: 620750)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	90.9	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	97.1	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	92.5	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	94.6	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	98.7	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	101	72	115
EP080: BTEXN (QCLot: 620756)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	86.8	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.3	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	89.1	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	86.8	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.0	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	100	72	115
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	54	125

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 624743)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00125 mg/kg	83.2	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.0	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.3	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.4	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.3	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.4	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.6	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 624743)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	103	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.1	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.3	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.6	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.1	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.5	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 624743)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.1	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	90.0	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.4	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.6	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 620763)							
EB1624685-033	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	# Not Determined	70	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620763) - continued							
EB1624685-033	Anonymous	EG005T: Cadmium	7440-43-9	25 mg/kg	114	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	# Not Determined	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	# 9.19	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	97.1	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	123	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620764)							
EB1624685-033	Anonymous	EG035T: Mercury	7439-97-6	2.5 mg/kg	# 139	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748)							
EB1624685-007	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	97.6	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	90.7	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	97.4	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	104	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	103	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	81.4	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620755)							
EB1624749-014	AM-BH14 0.25-0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	70.5	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	84.5	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	74.9	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	90.2	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	94.2	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	# 57.7	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748)							
EB1624685-007	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	90.0	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	75.8	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	105	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	111	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	103	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620755)							
EB1624749-014	AM-BH14 0.25-0.5	EP068: Diazinon	333-41-5	0.5 mg/kg	89.6	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	86.5	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	107	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	95.6	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	93.6	70	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754) - continued							
EB1624749-014	AM-BH14 0.25-0.5	EP071SG-S: C10 - C14 Fraction	----	318 mg/kg	62.5	47	130
		EP071SG-S: C15 - C28 Fraction	----	531 mg/kg	68.3	55	130
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620754)							
EB1624749-014	AM-BH14 0.25-0.5	EP071SG-S: >C10 - C16 Fraction	----	428 mg/kg	64.4	46	130
		EP071SG-S: >C16 - C34 Fraction	----	395 mg/kg	66.8	53	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620746)							
EB1624685-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	101	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	110	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620753)							
EB1624749-014	AM-BH14 0.25-0.5	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	116	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	124	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620747)							
EB1624685-004	Anonymous	EP071: C10 - C14 Fraction	----	318 mg/kg	82.4	70	130
		EP071: C15 - C28 Fraction	----	531 mg/kg	87.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: C6 - C9 Fraction	----	8 mg/kg	95.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: C6 - C9 Fraction	----	8 mg/kg	78.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620747)							
EB1624685-004	Anonymous	EP071: >C10 - C16 Fraction	----	428 mg/kg	84.2	70	130
		EP071: >C16 - C34 Fraction	----	395 mg/kg	84.9	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	93.8	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	76.0	70	130
EP080: BTEXN (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	93.3	70	130
		EP080: Toluene	108-88-3	2 mg/kg	91.1	70	130
EP080: BTEXN (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: Benzene	71-43-2	2 mg/kg	80.5	70	130
		EP080: Toluene	108-88-3	2 mg/kg	76.5	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	75.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	77.1	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	72.6	50	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743) - continued							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	94.9	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	86.0	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.00125 mg/kg	81.3	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00125 mg/kg	67.8	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	82.2	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	67.8	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	90.2	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	109	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	112	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	102	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	114	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	91.6	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	105	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	94.9	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	99.4	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	89.7	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	89.9	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.00312 mg/kg	94.3	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	73.4	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	112	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	109	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	98.6	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	110	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	87.3	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	103	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1624749**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Site	: Brisbane Airport	Issue Date	: 25-Oct-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 90
Order number	: 1538021	No. of samples analysed	: 85

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	QC-620755-002	----	**Hexachlorobenzene (HCB)**	118-74-1	114 %	54-112%	**Recovery greater than upper control limit**
EP068B: Organophosphorus Pesticides (OP)	QC-620755-002	----	**Pirimphos-ethyl**	23505-41-1	131 %	70-130%	**Recovery greater than upper control limit**
EP068B: Organophosphorus Pesticides (OP)	QC-620755-002	----	**Carbophenothion**	786-19-6	126 %	57-124%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Anthracene**	120-12-7	122 %	72-115%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Fluoranthene**	206-44-0	127 %	70-116%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Chrysene**	218-01-9	125 %	66-119%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Arsenic**	7440-38-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Chromium**	7440-47-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Copper**	7440-50-8	9.19 %	70-130%	**Recovery less than lower data quality objective**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG035T: Total Recoverable Mercury by FIMS	EB1624685--033	Anonymous	**Mercury**	7439-97-6	139 %	70-130%	**Recovery greater than upper data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB1624749--014	AM-BH14 0.25-0.5	**4.4`-DDT**	50-29-3	57.7 %	70-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH13 0-0.25,	AM-BH13 0.25-0.5,	**06-Oct-2016**	**19-Oct-2016**	04-Apr-2017	✓	**19-Oct-2016**	04-Apr-2017	✓
AM-BH13 0.5-0.75,	AM-BH13 0.75-1,							
AM-BH13 1-1.25,	AM-BH13 1.25-1.5,							
AM-BH13 1.5-1.75,	AM-BH13 1.75-2,							
AM-BH13 2-2.25,	AM-BH13 2.25-2.5,							
AM-BH13 2.5-2.75,	AM-BH13 2.75-3,							
AM-BH14 0-0.25,	AM-BH14 0.25-0.5,							
AM-BH14 0.5-0.75,	AM-BH14 0.75-1,							
AM-BH14 1-1.25,	AM-BH14 1.25-1.5,							
AM-BH14 1.5-1.75,	AM-BH14 1.75-2,							
AM-BH14 2-2.25,	AM-BH14 2.25-2.5,							
AM-BH14 2.5-2.75,	AM-BH14 2.75-3							
Snap Lock Bag - frozen (EA037)								
AM-BH15 0-0.25,	AM-BH15 0.25-0.5,	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓
AM-BH15 0.5-0.75,	AM-BH15 0.75-1,							
AM-BH15 1-1.25,	AM-BH15 1.25-1.5,							
AM-BH15 1.5-1.75,	AM-BH15 1.75-2,							
AM-BH15 2-2.25,	AM-BH15 2.25-2.5,							
AM-BH15 2.5-2.75,	AM-BH15 2.75-3,							
AM-BH16 0-0.25,	AM-BH16 0.25-0.5,							
AM-BH16 0.5-0.75,	AM-BH16 0.75-1,							
AM-BH16 1-1.25,	AM-BH16 1.25-1.5,							
AM-BH16 1.5-1.75,	AM-BH16 1.75-2,							
AM-BH16 2-2.25,	AM-BH16 2.25-2.5,							
AM-BH16 2.5-2.75,	AM-BH16 2.75-3,							
AM-BH25 0-0.25,	AM-BH25 0.25-0.5,							
AM-BH25 0.5-0.75,	AM-BH25 1.5-1.75,							
AM-BH25 1.75-2,	AM-BH25 2-2.25,							
AM-BH25 2.25-2.5,	AM-BH25 2.5-2.75,							
AM-BH25 2.75-3								
Snap Lock Bag - frozen (EA037)								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis - Continued								
AM-BH30 0-0.25, AM-BH30 0.5-0.75, AM-BH30 1-1.25, AM-BH30 1.5-1.75, AM-BH30 2-2.25, AM-BH30 2.5-2.75, AM-BH31 0.25-0.5, AM-BH31 0.75-1, AM-BH31 1.25-1.5, AM-BH31 1.75-2, AM-BH31 2.25-2.5, AM-BH31 2.75-3	AM-BH30 0.25-0.5, AM-BH30 0.75-1, AM-BH30 1.25-1.5, AM-BH30 1.75-2, AM-BH30 2.25-2.5, AM-BH31 0-0.25, AM-BH31 0.5-0.75, AM-BH31 1-1.25, AM-BH31 1.5-1.75, AM-BH31 2-2.25, AM-BH31 2.5-2.75,	**10-Oct-2016**	**19-Oct-2016**	08-Apr-2017	✓	**19-Oct-2016**	08-Apr-2017	✓
EA055: Moisture Content								
Snap Lock Bag - frozen (EA055-103) AM-BH13 2.75-3,	AM-BH14 0.75-1	**06-Oct-2016**	**----**	----	----	**20-Oct-2016**	20-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103) AM-BH15 1.75-2, AM-BH25 2.75-3	AM-BH16 2.75-3,	**07-Oct-2016**	**----**	----	----	**20-Oct-2016**	21-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103) AM-BH30 0.75-1,	AM-BH31 1.75-2	**10-Oct-2016**	**----**	----	----	**20-Oct-2016**	24-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**----**	----	----	**18-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0-0.1, AM-BH25 0.25-0.5,	AM-BH15 0-0.1, AM-BH16 0.25-0.5, QAQC001, AM-BH25 0.5-0.6	**07-Oct-2016**	**----**	----	----	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**----**	----	----	**18-Oct-2016**	24-Oct-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**19-Oct-2016**	04-Apr-2017	✓	**19-Oct-2016**	04-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0-0.1, AM-BH25 0.25-0.5	AM-BH15 0-0.1, AM-BH16 0.25-0.5, QAQC001,	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T) AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**19-Oct-2016**	08-Apr-2017	✓	**19-Oct-2016**	08-Apr-2017	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020R-T) AM-BH15 0-0.1,	AM-BH16 0-0.1	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**19-Oct-2016**	03-Nov-2016	✓	**19-Oct-2016**	03-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH15 0.25-0.5,	AM-BH15 0-0.1,	**07-Oct-2016**	**19-Oct-2016**	04-Nov-2016	✓	**19-Oct-2016**	04-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 0-0.1,	QAQC001,							
AM-BH25 0.25-0.5								
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**19-Oct-2016**	07-Nov-2016	✓	**19-Oct-2016**	07-Nov-2016	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
AM-BH16 0.25-0.5,	QAQC001							
Soil Glass Jar - Unpreserved (EP068)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
AM-BH16 0.25-0.5,	QAQC001							
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.5-0.6								
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.25-0.5								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.25-0.5								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.25-0.5								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	8	80	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	7	58	12.07	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	3	25	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	21	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
TRH - Semivolatile Fraction	EP071	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite R	EG020R-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020. Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre:	scurti@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:
REBATCH OF EB1624693

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	Chromium Suite
AM-BH26	0	0.25	soil	6/10/2016		bag		1	N	X
AM-BH26	1.75	2	soil	6/10/2016		bag		1	N	X
AM-BH26	2	2.25	soil	6/10/2016		bag		1	N	X
AM-BH18	0.75	1	soil	6/10/2016		bag		1	N	X
AM-BH18	1.25	1.5	soil	6/10/2016		bag		1	N	X
AM-BH18	2	2.25	soil	6/10/2016		bag		1	N	X
AM-BH24	0.75	1	soil	6/10/2016		bag		1	N	X
AM-BH24	1.5	1.75	soil	6/10/2016		bag		1	N	X
AM-BH24	2.25	2.5	soil	6/10/2016		bag		1	N	X
AM-BH10	0	0.25	soil	6/10/2016		bag		1	N	X
AM-BH10	1.5	1.75	soil	6/10/2016		bag		1	N	X
AM-BH10	2.5	2.75	soil	6/10/2016		bag		1	N	X
AM-BH32	0	0.25	soil	10/10/2016		bag		1	N	X
AM-BH32	1	1.25	soil	10/10/2016		bag		1	N	X
AM-BH32	2	2.25	soil	10/10/2016		bag		1	N	X
AM-BH29	0.75	1	soil	7/10/2016		bag+jar		2	N	X
AM-BH29	1	1.25	soil	7/10/2016		bag		1	N	X
AM-BH29	2.5	2.75	soil	7/10/2016		bag		1	N	X

Environmental Division
Brisbane
Work Order Reference
EB1625883

Telephone : + 61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Serena Curti	GOLDER	28/10/2016	4pm
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1625883**	Page	: 1 of 6
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016 16:50
Order number	: 1538021	Date Analysis Commenced	: 03-Nov-2016
C-O-C number	: ----	Issue Date	: 03-Nov-2016 15:09
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 18		
No. of samples analysed	: 18		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- **The samples in this work order have been re-batched from EB1624693.**
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime ($CaCO_3$) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH18 0.75-1	AM-BH18 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625883-001	EB1625883-002	EB1625883-003	EB1625883-004	EB1625883-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.6	8.0	4.7	4.3	4.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	25	104	41
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.04	0.17	0.06
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.028	0.418	0.006	0.021	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	17	260	<10	13	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.63	3.42	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	126	683	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.20	1.09	----	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	0.05	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	0.05	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	<0.02	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	<10	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	<0.02	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.04	0.19	0.07
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	28	117	43
Liming Rate	----	1	kg CaCO3/t	<1	<1	2	9	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.03	0.42	0.04	0.19	0.07
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	17	260	28	117	43
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	20	2	9	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH24 0.75-1	AM-BH24 1.5-1.75	AM-BH24 2.25-2.5	AM-BH10 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625883-006	EB1625883-007	EB1625883-008	EB1625883-009	EB1625883-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.7	8.1	4.2	5.5	6.3
Titratable Actual Acidity (23F)	----	2	mole H+ / t	33	<2	90	13	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.05	<0.02	0.14	0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.102	0.026	0.008	0.006
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	64	16	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	3.14	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	628	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	1.01	----	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	0.08	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	0.08	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	<0.02	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	<10	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	<0.02	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.06	<0.02	0.17	0.03	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	36	<10	106	18	<10
Liming Rate	----	1	kg CaCO3/t	3	<1	8	1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.06	0.10	0.17	0.03	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	36	64	106	18	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	3	5	8	1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1.5-1.75	AM-BH10 2.5-2.75	AM-BH32 0-0.25	AM-BH32 1-1.25	AM-BH32 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625883-011	EB1625883-012	EB1625883-013	EB1625883-014	EB1625883-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.1	4.8	7.4	4.5	4.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	25	43	<2	71	43
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.04	0.07	<0.02	0.11	0.07
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	1.70	3.69	0.037	0.269	2.31
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	1060	2300	23	168	1440
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	1.24	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	248	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	0.40	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	1.74	3.76	<0.02	0.38	2.38
Net Acidity (acidity units)	----	10	mole H+ / t	1080	2350	<10	239	1480
Liming Rate	----	1	kg CaCO3/t	81	176	<1	18	111
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	1.74	3.76	0.04	0.38	2.38
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	1080	2350	23	239	1480
Liming Rate excluding ANC	----	1	kg CaCO3/t	81	176	2	18	111

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0.75-1	AM-BH29 1-1.25	AM-BH29 2.5-2.75	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1625883-016	EB1625883-017	EB1625883-018	--------	--------
				Result	Result	Result	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.4	4.3	5.5	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	64	69	10	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.10	0.11	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.016	0.105	0.245	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	66	153	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.09	0.09	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	0.10	0.13	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	0.05	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	22	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	0.04	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	----	----
Net Acidity (sulfur units)	----	0.02	% S	0.13	0.25	0.26	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	80	156	163	----	----
Liming Rate	----	1	kg CaCO3/t	6	12	12	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.13	0.25	0.26	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	80	156	163	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	6	12	12	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1625883**	Page	: 1 of 3
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 03-Nov-2016
C-O-C number	: ----	Issue Date	: 03-Nov-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 18		
No. of samples analysed	: 18		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 638770)									
EB1625748-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.07	0.07	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	42	43	0.00	0% - 20%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.7	4.7	0.00	0% - 20%
EB1625883-010	AM-BH10 0-0.25	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.3	6.4	1.57	0% - 20%
EA033-B: Potential Acidity (QC Lot: 638770)									
EB1625748-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.005	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EB1625883-010	AM-BH10 0-0.25	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.006	0.008	14.5	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 638770)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.8 pH Unit	95.8	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	15 mole H+ / t	108	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 638770)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.295 % S	85.4	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 638770)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	100	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-D: Retained Acidity (QCLot: 638770)								
EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	0.052 % S	91.7	70	130
EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	<0.02	0.026 % S	109	70	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1625883**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016
Site	: Brisbane Airport	Issue Date	: 03-Nov-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 18
Order number	: 1538021	No. of samples analysed	: 18

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
80* dried soil (EA033)								
AM-BH26 0-0.25,	AM-BH26 1.75-2,	**06-Oct-2016**	**03-Nov-2016**	06-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH26 2-2.25,	AM-BH18 0.75-1,							
AM-BH18 1.25-1.5,	AM-BH18 2-2.25,							
AM-BH24 0.75-1,	AM-BH24 1.5-1.75,							
AM-BH24 2.25-2.5,	AM-BH10 0-0.25,							
AM-BH10 1.5-1.75,	AM-BH10 2.5-2.75							
80* dried soil (EA033)								
AM-BH29 0.75-1,	AM-BH29 1-1.25,	**07-Oct-2016**	**03-Nov-2016**	07-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH29 2.5-2.75								
80* dried soil (EA033)								
AM-BH32 0-0.25,	AM-BH32 1-1.25,	**10-Oct-2016**	**03-Nov-2016**	10-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH32 2-2.25								
EA033-B: Potential Acidity								
80* dried soil (EA033)								
AM-BH26 0-0.25,	AM-BH26 1.75-2,	**06-Oct-2016**	**03-Nov-2016**	06-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH26 2-2.25,	AM-BH18 0.75-1,							
AM-BH18 1.25-1.5,	AM-BH18 2-2.25,							
AM-BH24 0.75-1,	AM-BH24 1.5-1.75,							
AM-BH24 2.25-2.5,	AM-BH10 0-0.25,							
AM-BH10 1.5-1.75,	AM-BH10 2.5-2.75							
80* dried soil (EA033)								
AM-BH29 0.75-1,	AM-BH29 1-1.25,	**07-Oct-2016**	**03-Nov-2016**	07-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH29 2.5-2.75								
80* dried soil (EA033)								
AM-BH32 0-0.25,	AM-BH32 1-1.25,	**10-Oct-2016**	**03-Nov-2016**	10-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH32 2-2.25								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity								
80* dried soil (EA033) AM-BH26 0-0.25, AM-BH26 2-2.25, AM-BH18 1.25-1.5, AM-BH24 0.75-1, AM-BH24 2.25-2.5, AM-BH10 1.5-1.75,	AM-BH26 1.75-2, AM-BH18 0.75-1, AM-BH18 2-2.25, AM-BH24 1.5-1.75, AM-BH10 0-0.25, AM-BH10 2.5-2.75	**06-Oct-2016**	**03-Nov-2016**	06-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH29 0.75-1, AM-BH29 2.5-2.75	AM-BH29 1-1.25,	**07-Oct-2016**	**03-Nov-2016**	07-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH32 0-0.25, AM-BH32 2-2.25	AM-BH32 1-1.25,	**10-Oct-2016**	**03-Nov-2016**	10-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
EA033-D: Retained Acidity								
80* dried soil (EA033) AM-BH26 0-0.25, AM-BH26 2-2.25, AM-BH18 1.25-1.5, AM-BH24 0.75-1, AM-BH24 2.25-2.5, AM-BH10 1.5-1.75,	AM-BH26 1.75-2, AM-BH18 0.75-1, AM-BH18 2-2.25, AM-BH24 1.5-1.75, AM-BH10 0-0.25, AM-BH10 2.5-2.75	**06-Oct-2016**	**03-Nov-2016**	06-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH29 0.75-1, AM-BH29 2.5-2.75	AM-BH29 1-1.25,	**07-Oct-2016**	**03-Nov-2016**	07-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH32 0-0.25, AM-BH32 2-2.25	AM-BH32 1-1.25,	**10-Oct-2016**	**03-Nov-2016**	10-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
EA033-E: Acid Base Accounting								
80* dried soil (EA033) AM-BH26 0-0.25, AM-BH26 2-2.25, AM-BH18 1.25-1.5, AM-BH24 0.75-1, AM-BH24 2.25-2.5, AM-BH10 1.5-1.75,	AM-BH26 1.75-2, AM-BH18 0.75-1, AM-BH18 2-2.25, AM-BH24 1.5-1.75, AM-BH10 0-0.25, AM-BH10 2.5-2.75	**06-Oct-2016**	**03-Nov-2016**	06-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH29 0.75-1, AM-BH29 2.5-2.75	AM-BH29 1-1.25,	**07-Oct-2016**	**03-Nov-2016**	07-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH32 0-0.25, AM-BH32 2-2.25	AM-BH32 1-1.25,	**10-Oct-2016**	**03-Nov-2016**	10-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre:	scurti@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Golder Associates
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:
REBATCH OF EB1624749

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	Chromium Suite
AM-BH13	1	1.25	soil	6/10/2016		bag		1	N	X
AM-BH13	1.75	2	soil	6/10/2016		bag		1	N	X
AM-BH13	2.5	2.75	soil	6/10/2016		bag		1	N	X
AM-BH14	0.75	1	soil	6/10/2016		bag		1	N	X
AM-BH14	1.5	1.75	soil	6/10/2016		bag		1	N	X
AM-BH14	2.25	2.5	soil	6/10/2016		bag		1	N	X
AM-BH15	0	0.25	soil	7/10/2016		bag		1	N	X
AM-BH15	1.75	2	soil	7/10/2016		bag		1	N	X
AM-BH15	2.5	2.75	soil	7/10/2016		bag		1	N	X
AM-BH16	0	0.25	soil	7/10/2016		bag		1	N	X
AM-BH16	0.5	0.75	soil	7/10/2016		bag		1	N	X
AM-BH16	2.5	2.75	soil	7/10/2016		bag		1	N	X
AM-BH25	0.25	0.5	soil	6/10/2016		bag		1	N	X
AM-BH25	1.5	1.75	soil	6/10/2016		bag		2	N	X
AM-BH25	2.25	2.5	soil	6/10/2016		bag		1	N	X
AM-BH30	0.25	0.5	soil	10/10/2016		bag+2jar		3	N	X
AM-BH30	1.5	1.75	soil	10/10/2016		bag		1	N	X
AM-BH30	2.25	2.5	soil	10/10/2016		bag		1	N	X
AM-BH31	0.5	0.75	soil	10/10/2016		bag		1	N	X
AM-BH31	1.25	1.5	soil	10/10/2016		bag		1	N	X
AM-BH31	2.75	3	soil	10/10/2016		bag+jar		2	N	X

Environmental Division
Brisbane
Work Order Reference
EB1625888

Telephone : +61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Serena Curti	GOLDER	28/10/2016	4pm
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory LAB BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1625888**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 3
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 28-Oct-2016 3:00 PM	Issue Date	: 31-Oct-2016
Client Requested Due Date	: 04-Nov-2016	Scheduled Reporting Date	: **04-Nov-2016**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: AMBIENT
Receipt Detail	: REBATCH	No. of samples received / analysed	: 21 / 21

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **The samples in this work order have been re-batched from EB1624749.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EA033 Chromium Suite for Acid Sulphate Soils
EB1625888-001	[06-Oct-2016]	AM-BH13 1-1.25	✓
EB1625888-002	[06-Oct-2016]	AM-BH13 1.75-2	✓
EB1625888-003	[06-Oct-2016]	AM-BH13 2.5-2.75	✓
EB1625888-004	[06-Oct-2016]	AM-BH14 0.75-1	✓
EB1625888-005	[06-Oct-2016]	AM-BH14 1.5-1.75	✓
EB1625888-006	[06-Oct-2016]	AM-BH14 2.25-2.5	✓
EB1625888-007	[07-Oct-2016]	AM-BH15 0-0.25	✓
EB1625888-008	[07-Oct-2016]	AM-BH15 1.75-2	✓
EB1625888-009	[07-Oct-2016]	AM-BH15 2.5-2.75	✓
EB1625888-010	[07-Oct-2016]	AM-BH16 0-0.25	✓
EB1625888-011	[07-Oct-2016]	AM-BH16 0.5-0.75	✓
EB1625888-012	[07-Oct-2016]	AM-BH16 2.5-2.75	✓
EB1625888-013	[06-Oct-2016]	AM-BH25 0.25-0.5	✓
EB1625888-014	[06-Oct-2016]	AM-BH25 1.5-1.75	✓
EB1625888-015	[06-Oct-2016]	AM-BH25 2.25-2.5	✓
EB1625888-016	[10-Oct-2016]	AM-BH30 0.25-0.5	✓
EB1625888-017	[10-Oct-2016]	AM-BH30 1.5-1.75	✓
EB1625888-018	[10-Oct-2016]	AM-BH30 2.25-2.5	✓
EB1625888-019	[10-Oct-2016]	AM-BH31 0.5-0.75	✓
EB1625888-020	[10-Oct-2016]	AM-BH31 1.25-1.5	✓
EB1625888-021	[10-Oct-2016]	AM-BH31 2.75-3	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au

SERENA CURTI

- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1625888**	Page	: 1 of 7
Amendment	: **1**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016 15:00
Order number	: 1538021	Date Analysis Commenced	: 02-Nov-2016
C-O-C number	: ----	Issue Date	: 02-Nov-2016 16:46
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 21		
No. of samples analysed	: 21		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- **The samples in this work order have been re-batched from EB1624749.**
- Amendment (02/11/2016): This report has been amended and re-released to allow adjustment of the LCS amount added value for TAA. New LCS was used with old LCS amount added value, causing Standard to appear to fail. All analysis results are as per the previous report.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime ($CaCO_3$) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1-1.25	AM-BH13 1.75-2	AM-BH13 2.5-2.75	AM-BH14 0.75-1	AM-BH14 1.5-1.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625888-001	EB1625888-002	EB1625888-003	EB1625888-004	EB1625888-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.4	4.4	5.0	5.8	4.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	71	19	<2	52
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	0.11	0.03	<0.02	0.08
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.012	0.078	0.006	0.080	0.006
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	49	<10	50	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	0.05	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	0.06	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	<0.02	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	<10	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	<0.02	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.20	0.04	0.08	0.09
Net Acidity (acidity units)	----	10	mole H+ / t	<10	126	23	51	56
Liming Rate	----	1	kg CaCO3/t	<1	9	2	4	4
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	0.20	0.04	0.08	0.09
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	126	23	51	56
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	9	2	4	4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2.25-2.5	AM-BH15 0-0.25	AM-BH15 1.75-2	AM-BH15 2.5-2.75	AM-BH16 0-0.25
			Client sampling date / time	[06-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625888-006	EB1625888-007	EB1625888-008	EB1625888-009	EB1625888-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.1	5.8	6.0	6.1	8.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	2	12	4	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.005	0.036	<0.005	0.016	0.219
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	22	<10	10	136
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	----	10.6
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	----	2120
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	----	3.40
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.06	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	35	<10	11	<10
Liming Rate	----	1	kg CaCO3/t	<1	3	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	0.06	<0.02	<0.02	0.22
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	35	<10	11	136
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	3	<1	<1	10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 2.5-2.75	AM-BH25 0.25-0.5	AM-BH25 1.5-1.75	AM-BH25 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625888-011	EB1625888-012	EB1625888-013	EB1625888-014	EB1625888-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.5	8.4	7.9	8.4	6.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	62	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.10	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.008	0.358	0.013	0.078	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	223	<10	49	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	1.35	3.57	3.32	0.38
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	270	713	664	76
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	0.43	1.14	1.06	0.12
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.11	0.07	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	66	43	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	5	3	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.11	0.36	<0.02	0.08	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	66	223	<10	49	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	5	17	<1	4	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.25-0.5	AM-BH30 1.5-1.75	AM-BH30 2.25-2.5	AM-BH31 0.5-0.75	AM-BH31 1.25-1.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625888-016	EB1625888-017	EB1625888-018	EB1625888-019	EB1625888-020
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.6	6.2	6.7	4.9	5.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	54	6	<2	39	22
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.09	<0.02	<0.02	0.06	0.04
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.010	0.333	1.17	0.057	1.15
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	208	727	36	716
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	1.37	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	274	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	0.44	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.10	0.34	0.87	0.12	1.18
Net Acidity (acidity units)	----	10	mole H+ / t	60	214	545	75	738
Liming Rate	----	1	kg CaCO3/t	4	16	41	6	55
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.10	0.34	1.17	0.12	1.18
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	60	214	727	75	738
Liming Rate excluding ANC	----	1	kg CaCO3/t	4	16	54	6	55

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 2.75-3	----	----	----	----
			Client sampling date / time	[10-Oct-2016]	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1625888-021	--------	--------	--------	--------
				Result	----	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.2	----	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	19	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	----	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	1.18	----	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	734	----	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	1.21	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	753	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	56	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	1.21	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	753	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	56	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1625888**	Page	: 1 of 4
Amendment	: **1**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 02-Nov-2016
C-O-C number	: ----	Issue Date	: 02-Nov-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 21		
No. of samples analysed	: 21		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 637227)									
EB1625884-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.03	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	20	19	5.49	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.3	5.3	0.00	0% - 20%
EB1625888-002	AM-BH13 1.75-2	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.11	0.11	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	71	68	4.70	0% - 20%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.4	4.4	0.00	0% - 20%
EA033-A: Actual Acidity (QC Lot: 637228)									
EB1625888-012	AM-BH16 2.5-2.75	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.4	8.5	1.18	0% - 20%
EA033-B: Potential Acidity (QC Lot: 637227)									
EB1625884-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.006	0.006	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EB1625888-002	AM-BH13 1.75-2	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.078	0.077	0.00	0% - 50%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	49	48	0.00	No Limit
EA033-B: Potential Acidity (QC Lot: 637228)									
EB1625888-012	AM-BH16 2.5-2.75	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.358	0.357	0.00	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	223	223	0.00	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 637228)									
EB1625888-012	AM-BH16 2.5-2.75	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.35	1.41	4.04	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EA033-C: Acid Neutralising Capacity (QC Lot: 637228) - continued									
EB1625888-012	AM-BH16 2.5-2.75	EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.43	0.45	4.04	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	270	282	4.04	0% - 20%
EA033-D: Retained Acidity (QC Lot: 637227)									
EB1625888-002	AM-BH13 1.75-2	EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.05	0.05	0.00	No Limit
		EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	0.06	0.06	0.00	No Limit
		EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	<10	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 637227)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.8 pH Unit	95.8	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	15 mole H+ / t	100	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-A: Actual Acidity (QCLot: 637228)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.8 pH Unit	95.8	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	15 mole H+ / t	102	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 637227)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.295 % S	82.9	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-B: Potential Acidity (QCLot: 637228)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.295 % S	91.5	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 637227)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	102	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 637228)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	102	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-D: Retained Acidity (QCLot: 637227)								
EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	0.052 % S	85.1	70	130
EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	<0.02	0.026 % S	105	70	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1625888**	Page	: 1 of 6
Amendment	: **1**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016
Site	: Brisbane Airport	Issue Date	: 02-Nov-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 21
Order number	: 1538021	No. of samples analysed	: 21

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
80* dried soil (EA033)								
AM-BH13 1-1.25,	AM-BH13 1.75-2,	**06-Oct-2016**	**02-Nov-2016**	06-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH13 2.5-2.75,	AM-BH14 0.75-1,							
AM-BH14 1.5-1.75,	AM-BH14 2.25-2.5,							
AM-BH25 0.25-0.5,	AM-BH25 1.5-1.75,							
AM-BH25 2.25-2.5								
80* dried soil (EA033)								
AM-BH15 0-0.25,	AM-BH15 1.75-2,	**07-Oct-2016**	**02-Nov-2016**	07-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH15 2.5-2.75,	AM-BH16 0-0.25,							
AM-BH16 0.5-0.75,	AM-BH16 2.5-2.75							
80* dried soil (EA033)								
AM-BH30 0.25-0.5,	AM-BH30 1.5-1.75,	**10-Oct-2016**	**02-Nov-2016**	10-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH30 2.25-2.5,	AM-BH31 0.5-0.75,							
AM-BH31 1.25-1.5,	AM-BH31 2.75-3							
EA033-B: Potential Acidity								
80* dried soil (EA033)								
AM-BH13 1-1.25,	AM-BH13 1.75-2,	**06-Oct-2016**	**02-Nov-2016**	06-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH13 2.5-2.75,	AM-BH14 0.75-1,							
AM-BH14 1.5-1.75,	AM-BH14 2.25-2.5,							
AM-BH25 0.25-0.5,	AM-BH25 1.5-1.75,							
AM-BH25 2.25-2.5								
80* dried soil (EA033)								
AM-BH15 0-0.25,	AM-BH15 1.75-2,	**07-Oct-2016**	**02-Nov-2016**	07-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH15 2.5-2.75,	AM-BH16 0-0.25,							
AM-BH16 0.5-0.75,	AM-BH16 2.5-2.75							
80* dried soil (EA033)								
AM-BH30 0.25-0.5,	AM-BH30 1.5-1.75,	**10-Oct-2016**	**02-Nov-2016**	10-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH30 2.25-2.5,	AM-BH31 0.5-0.75,							
AM-BH31 1.25-1.5,	AM-BH31 2.75-3							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity								
80* dried soil (EA033)								
AM-BH13 1-1.25,	AM-BH13 1.75-2,	**06-Oct-2016**	**02-Nov-2016**	06-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH13 2.5-2.75,	AM-BH14 0.75-1,							
AM-BH14 1.5-1.75,	AM-BH14 2.25-2.5,							
AM-BH25 0.25-0.5,	AM-BH25 1.5-1.75,							
AM-BH25 2.25-2.5								
80* dried soil (EA033)								
AM-BH15 0-0.25,	AM-BH15 1.75-2,	**07-Oct-2016**	**02-Nov-2016**	07-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH15 2.5-2.75,	AM-BH16 0-0.25,							
AM-BH16 0.5-0.75,	AM-BH16 2.5-2.75							
80* dried soil (EA033)								
AM-BH30 0.25-0.5,	AM-BH30 1.5-1.75,	**10-Oct-2016**	**02-Nov-2016**	10-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH30 2.25-2.5,	AM-BH31 0.5-0.75,							
AM-BH31 1.25-1.5,	AM-BH31 2.75-3							
EA033-D: Retained Acidity								
80* dried soil (EA033)								
AM-BH13 1-1.25,	AM-BH13 1.75-2,	**06-Oct-2016**	**02-Nov-2016**	06-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH13 2.5-2.75,	AM-BH14 0.75-1,							
AM-BH14 1.5-1.75,	AM-BH14 2.25-2.5,							
AM-BH25 0.25-0.5,	AM-BH25 1.5-1.75,							
AM-BH25 2.25-2.5								
80* dried soil (EA033)								
AM-BH15 0-0.25,	AM-BH15 1.75-2,	**07-Oct-2016**	**02-Nov-2016**	07-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH15 2.5-2.75,	AM-BH16 0-0.25,							
AM-BH16 0.5-0.75,	AM-BH16 2.5-2.75							
80* dried soil (EA033)								
AM-BH30 0.25-0.5,	AM-BH30 1.5-1.75,	**10-Oct-2016**	**02-Nov-2016**	10-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH30 2.25-2.5,	AM-BH31 0.5-0.75,							
AM-BH31 1.25-1.5,	AM-BH31 2.75-3							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting								
80* dried soil (EA033)								
AM-BH13 1-1.25,	AM-BH13 1.75-2,	**06-Oct-2016**	**02-Nov-2016**	06-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH13 2.5-2.75,	AM-BH14 0.75-1,							
AM-BH14 1.5-1.75,	AM-BH14 2.25-2.5,							
AM-BH25 0.25-0.5,	AM-BH25 1.5-1.75,							
AM-BH25 2.25-2.5								
80* dried soil (EA033)								
AM-BH15 0-0.25,	AM-BH15 1.75-2,	**07-Oct-2016**	**02-Nov-2016**	07-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH15 2.5-2.75,	AM-BH16 0-0.25,							
AM-BH16 0.5-0.75,	AM-BH16 2.5-2.75							
80* dried soil (EA033)								
AM-BH30 0.25-0.5,	AM-BH30 1.5-1.75,	**10-Oct-2016**	**02-Nov-2016**	10-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH30 2.25-2.5,	AM-BH31 0.5-0.75,							
AM-BH31 1.25-1.5,	AM-BH31 2.75-3							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	3	30	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

CHAIN OF CUSTODY DOCUMENTATION - WATER

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS
Sampled By:	Morgan Midgley		
Turnaround (Days):	5 days	BY:	
Report Format:	Please provide data in ESDAT format		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton Qld 4064
Phone : (07) 3721 5400
Fax : (07) 3721 5401
Invoice to be sent to Accounts Aust: auaccountspayable@golder.com.au
Project Manager: K Biram
Contact Phone: 37215400
Email: scurti@golder.com.au

Comments/Special Instructions:

Copy results to: pscells@golder.com.au
scurti@golder.com.au

ANALYSIS REQUIRED

	SAMPLE ID	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	No.CONTAINERS	POSSIBLE HIGH CONCENTRATION	PFAS extended suite 28 - ultra trace levels	pH	Major Anions - Cl, So4, alkalinity	Electrical conductivity	Major Cations - Ca, Mg, K, Na	Acidity	W-2 8 metals	Dissolved Al + Fe
1	AM-BH08	Water	25-10-16	1206	Ice	2	N	X							
2	AM-BH19	Water	25-10-16	1054	Ice	2	N	X							
3	BIP-~~BAC~~-MW07	Water	25.10.16	12.32	Ice	2	N	X							
4	BIP-MW1	Water	25.10.16	13.33	Ice	2	N	X							
5	BIP-MW2	Water	25-10-16	13.15	Ice	2	N	X							
6	AM-~~CP11~~MW31	Water	25-10-16	1312	Ice	4	N	X	X	X	X	X	X	X	X
7	AM-MW14	Water	25-10-16	0940	Ice	4	N	X	X	X	X	X	X	X	X
8	AM-MW15	Water	25.10.16	10.32	Ice	4	N	X	X	X	X	X	X	X	X
9	AM-MW16	Water	25.10.16	9.07	Ice	4	N	X	X	X	X	X	X	X	X
10	AM-MW10	Water	25.10.16	11.27	Ice	4	N	X	X	X	X	X	X	X	X
11	QAQC100	Water	25.10.16	9.07	Ice	4	N	X						X	
12	QAQC300	Water	25.10.16	14.30	Ice	3	N	X						X	

HOLD ALL OTHER BOTTLES NOT SELECTED FOR ANALYSIS

Environmental Division
Brisbane
Work Order Reference
EB1625464

Telephone : +61-7-3243 7222

SAMPLE MATRIX =Water SAMPLE TYPE = Discrete(DC) POSSIBLE HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid Preserved Vial; BS = Sulphuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; O = Other

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	[signature]	GOLDER		
RECEIVED BY	[signature]	ALS	25/10/16	15:15
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref.
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		Chilled		LAB BATCH NUMBER	
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1625464**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 3
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 25-Oct-2016 3:15 PM	Issue Date	: 25-Oct-2016
Client Requested Due Date	: 01-Nov-2016	Scheduled Reporting Date	: **01-Nov-2016**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.4°C, 5.8°C - Ice present
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 12 / 12

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
QAQC300	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
QAQC300	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PC)	WATER - EA010P Conductivity (PC)	WATER - ED038 Default Acidity as CaCO3 only	WATER - EG020F Dissolved Metals by ICPMS	WATER - EP231X-LL PFAS - Full Suite Low Level (28 analytes)	WATER - NT-01 & 02 Ca, Mg, Na, K, Cl, SO4, Alkalinity	WATER - W-02 8 Metals
EB1625464-001	25-Oct-2016 12:06	AM-BH08					✓		
EB1625464-002	25-Oct-2016 10:54	AM-BH19					✓		
EB1625464-003	25-Oct-2016 12:32	BIP-MW07					✓		
EB1625464-004	25-Oct-2016 13:33	BIP-MW1					✓		
EB1625464-005	25-Oct-2016 14:15	BIP-MW2					✓		
EB1625464-006	25-Oct-2016 13:12	AM-MW31	✓	✓	✓	✓	✓	✓	✓
EB1625464-007	25-Oct-2016 09:40	AM-MW14	✓	✓	✓	✓	✓	✓	✓
EB1625464-008	25-Oct-2016 10:32	AM-MW15	✓	✓	✓	✓	✓	✓	✓
EB1625464-009	25-Oct-2016 09:07	AM-MW16	✓	✓	✓	✓	✓	✓	✓
EB1625464-010	25-Oct-2016 11:27	AM-MW10	✓	✓	✓	✓	✓	✓	✓
EB1625464-011	25-Oct-2016 09:07	QAQC100					✓		✓
EB1625464-012	25-Oct-2016 14:30	QAQC300					✓		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au
K BIRAM		
- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
PAUL SCELLS		
- *AU Certificate of Analysis - NATA (COA)	Email	pscells@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	pscells@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	pscells@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	pscells@golder.com.au
- Chain of Custody (CoC) (COC)	Email	pscells@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	pscells@golder.com.au
SERENA CURTI		
- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1625464**	Page	: 1 of 9
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 27-Oct-2016
C-O-C number	: ----	Issue Date	: 01-Nov-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA005P: pH by PC Titrator (QC Lot: 632975)									
EB1625473-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.75	6.90	2.20	0% - 20%
EB1625444-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.56	7.53	0.398	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 632976)									
EB1625444-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	431	431	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 632978)									
EB1625444-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	46	48	4.58	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	46	48	4.58	0% - 20%
ED038A: Acidity (QC Lot: 634475)									
EB1625246-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	6	6	0.00	No Limit
EB1625464-009	AM-MW16	ED038: Acidity as CaCO3	----	1	mg/L	388	400	3.08	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 630949)									
EB1625413-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	5620	5460	2.91	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 630948)									
EB1625413-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	2410	2510	4.32	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 631832)									
EB1625502-003	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	494	493	0.253	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	51	51	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	254	250	1.60	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	191	190	0.00	0% - 20%
EB1625464-006	AM-MW31	ED093F: Calcium	7440-70-2	1	mg/L	436	448	2.77	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	1010	1040	3.01	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	6800	6940	2.00	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 631832) - continued									
EB1625464-006	AM-MW31	ED093F: Potassium	7440-09-7	1	mg/L	238	244	2.52	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 631833)									
EB1625502-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0006	0.0006	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.023	0.024	0.00	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	1.31	1.25	4.96	0% - 20%
EB1625464-006	AM-MW31	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.024	0.024	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.118	0.123	3.52	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.10	0.08	14.9	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	12.2	12.6	3.41	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 631834)									
EB1625507-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0001	0.0001	0.00	No Limit
EB1625464-006	AM-MW31	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	2.61	2.51	4.02	0% - 20%
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	1.64	1.57	4.06	0% - 20%
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	7.91	7.58	4.36	0% - 20%
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	0.042	0.041	3.36	0% - 20%
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.347	0.393	12.5	0% - 20%
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 633504) - continued									
EB1625464-003	BIP-MW07	EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	0.042	0.034	18.9	0% - 20%
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	0.422	0.418	0.952	0% - 20%
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	0.009	0.007	26.8	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	0.025	0.022	15.3	0% - 50%
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.002	0.00	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 633504) - continued									
EB1625449-001	Anonymous	EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 632975)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98	102
				----	7 pH Unit	101	98	102
EA010P: Conductivity by PC Titrator (QCLot: 632976)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	4000 µS/cm	95.7	91	107
				<1	12890 µS/cm	96.0	91	107
ED037P: Alkalinity by PC Titrator (QCLot: 632978)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	106	80	120
ED038A: Acidity (QCLot: 634475)								
ED038: Acidity as CaCO3	----	----	mg/L	----	100 mg/L	104	90	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 630949)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	96.2	85	118
				<1	100 mg/L	93.0	85	118
ED045G: Chloride by Discrete Analyser (QCLot: 630948)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	96.2	90	115
				<1	1000 mg/L	106	90	115
ED093F: Dissolved Major Cations (QCLot: 631832)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
ED093F: Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
ED093F: Sodium	7440-23-5	1	mg/L	<1	----	----	----	----
ED093F: Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 631833)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	89.7	79	118
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.8	88	116
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	88	108
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.0	87	113
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.2 mg/L	96.0	88	114
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.2	89	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.9	89	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.2 mg/L	97.6	87	113
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	85.5	82	114
EG035F: Dissolved Mercury by FIMS (QCLot: 631834)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.9	84	118
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504) - continued								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.05 µg/L	103	60	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.05 µg/L	99.4	60	130
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.05 µg/L	120	60	130
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.05 µg/L	121	60	130
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.05 µg/L	115	60	130
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	0.05 µg/L	91.2	60	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.05 µg/L	101	60	130
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.05 µg/L	90.2	60	130
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.05 µg/L	104	60	130
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.05 µg/L	104	60	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.05 µg/L	90.2	60	130
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.05 µg/L	96.0	60	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.05 µg/L	115	60	130
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.05 µg/L	84.8	60	130
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.05 µg/L	85.0	60	130
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.05 µg/L	78.6	60	130
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.125 µg/L	71.0	60	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 633504)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.05 µg/L	120	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.125 µg/L	106	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.125 µg/L	83.0	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	0.125 µg/L	90.8	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.125 µg/L	76.4	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.05 µg/L	86.6	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.05 µg/L	117	60	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 633504)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.05 µg/L	97.8	60	130
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.05 µg/L	110	60	130
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.05 µg/L	81.2	60	130
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.05 µg/L	78.2	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 630949)							
EB1625451-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	# Not Determined	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 630948)							
EB1625451-001	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	89.9	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 631833)							
EB1625464-007	AM-MW14	EG020A-F: Aluminium	7429-90-5	0.5 mg/L	117	70	130
		EG020A-F: Arsenic	7440-38-2	0.1 mg/L	110	70	130
		EG020A-F: Cadmium	7440-43-9	0.1 mg/L	101	70	130
		EG020A-F: Chromium	7440-47-3	0.1 mg/L	90.5	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	86.0	70	130
		EG020A-F: Lead	7439-92-1	0.1 mg/L	110	70	130
		EG020A-F: Nickel	7440-02-0	0.1 mg/L	88.5	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	99.6	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 631834)							
EB1625464-007	AM-MW14	EG035F: Mercury	7439-97-6	0.01 mg/L	71.3	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.05 µg/L	94.0	50	130
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.05 µg/L	# Not Determined	60	130
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.05 µg/L	90.8	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	55.9	50	130
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.05 µg/L	71.0	50	130
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.05 µg/L	64.4	61	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.05 µg/L	69.4	60	130
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.05 µg/L	79.8	50	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.05 µg/L	96.0	65	130
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.05 µg/L	72.8	50	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504) - continued							
EB1625449-002	Anonymous	EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.05 µg/L	67.0	50	130
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.05 µg/L	60.4	30	130
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.125 µg/L	47.4	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.05 µg/L	103	50	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.125 µg/L	83.4	50	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.125 µg/L	70.5	50	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.125 µg/L	63.7	36	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.125 µg/L	60.0	30	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.05 µg/L	62.8	50	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.05 µg/L	64.0	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05 µg/L	84.4	50	130
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05 µg/L	69.8	60	130
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05 µg/L	76.2	60	130
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05 µg/L	60.2	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1625464**	Page	: 1 of 8
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016
Site	: Brisbane Airport	Issue Date	: 01-Nov-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 12
Order number	: 1538021	No. of samples analysed	: 12

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EB1625451--001	Anonymous	**Sulfate as SO4 - Turbidimetric**	14808-79-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluoropentane sulfonic acid (PFPeS)**	2706-91-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EB1625449--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
AM-MW31, AM-MW15, AM-MW10	AM-MW14, AM-MW16,	----	----	----	27-Oct-2016	25-Oct-2016	**2**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	25-Oct-2016	×
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	08-Nov-2016	✓
ED038A: Acidity							
Clear Plastic Bottle - Natural (ED038) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**28-Oct-2016**	08-Nov-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Natural (EG020A-F) QAQC300	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	23-Apr-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10, QAQC100	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	23-Apr-2017	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F)								
QAQC300		**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)								
AM-MW31,	AM-MW14,	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
AM-MW15,	AM-MW16,							
AM-MW10,	QAQC100							
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction followed by and LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1625464**	Page	: 1 of 12
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016 15:15
Order number	: 1538021	Date Analysis Commenced	: 27-Oct-2016
C-O-C number	: ----	Issue Date	: 01-Nov-2016 22:12
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020-F (Dissolved Metals): LOR's have been raised for some samples due to matrix interference.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	----	----	----	----	----
Total Cations	----	0.01	meq/L	----	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	**0.008**	**0.005**	<0.002	**0.008**	**0.002**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	**0.005**	**0.003**	<0.002	**0.004**	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.007**	**0.012**	<0.002	**0.011**	<0.002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	**0.004**	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	**0.002**	<0.002	<0.002	**0.006**	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.022**	**0.020**	<0.002	**0.033**	**0.002**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	**0.007**	**0.012**	<0.002	**0.011**	<0.002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**92.4**	**109**	**91.0**	**82.7**	**90.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.65	6.26	6.43	6.06	6.99
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	35300	20400	9120	14800	51400
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	341	362	185	95	297
Total Alkalinity as CaCO3	----	1	mg/L	341	362	185	95	297
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	242	570	218	388	260
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2620	2660	1140	1760	2400
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	13300	6920	2750	4900	20700
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	436	348	192	242	407
Magnesium	7439-95-4	1	mg/L	1010	649	265	335	1220
Sodium	7440-23-5	1	mg/L	6800	3500	1420	2460	10700
Potassium	7440-09-7	1	mg/L	238	54	39	63	375
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.10	0.08	<0.01	<0.01	<0.05
Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.005	0.001	0.004	<0.005
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	<0.0001	<0.0001	<0.0005
Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Copper	7440-50-8	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Nickel	7440-02-0	0.001	mg/L	0.024	0.074	0.018	0.032	0.018
Lead	7439-92-1	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Zinc	7440-66-6	0.005	mg/L	0.118	0.194	0.076	0.118	0.134
Iron	7439-89-6	0.05	mg/L	12.2	87.6	7.58	87.6	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	436	258	105	177	640
Total Cations	----	0.01	meq/L	407	224	94.2	148	596

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	**3.53**	**6.93**	**5.45**	**8.77**	**3.57**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	**0.171**	**0.011**	**0.037**	**0.006**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	**0.084**	**0.006**	**0.029**	**0.008**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	**0.394**	**0.054**	**0.293**	**0.062**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	**0.002**	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	**0.011**	<0.002	**0.021**	**0.004**
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	**0.004**	<0.002	**0.005**	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	**0.019**	<0.002	**0.023**	**0.003**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	**0.005**	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	**0.003**	<0.002	**0.016**	**0.004**
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	**0.686**	**0.071**	**0.431**	**0.087**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	<0.002	**0.405**	**0.054**	**0.314**	**0.066**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**87.2**	**89.4**	**86.8**	**102**	**87.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.004**	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.032**	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.120**	<0.005	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	----	----	----	----	----
Total Cations	----	0.01	meq/L	----	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	**0.036**	<0.002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	**0.029**	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.291**	<0.002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	**0.023**	<0.002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	**0.005**	<0.002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	**0.022**	<0.002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	**0.005**	<0.002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	**0.011**	<0.002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.422**	<0.002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	**0.314**	<0.002	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**82.4**	**94.5**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	120

APPENDIX D

Important Information Relating to this Report

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22 November 2016

ACID SULFATE SOIL ASSESSMENT

Auto Mall Precinct Stage 2

Submitted to:
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REPORT

Report Number. 1538021-012-R-Rev0

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1 Electronic Copy

Golder Associates

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Figure 1: Proposed Development with Previous and Current Investigation Locations

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1.0 INTRODUCTION

Brisbane Airport Corporation Pty Ltd (BAC) commissioned Golder Associates Pty Ltd (Golder) to undertake an Acid Sulfate Soil (ASS) assessment for Stage 2 of the Auto Mall Precinct project at the Brisbane Airport (see Figure 1). Golder has previously conducted an acid sulfate soil investigation for Stage 1of the Auto Mall Precinct for BAC (reference 1538021-005-R-RevA, February 2016). The purpose of the current assessment is to inform the detailed design of the proposed development.

The ASS investigation was undertaken during October 2016 as part of a combined geotechnical, contamination and ASS investigation and is based on the scope of work defined in our proposal (Golder document reference no. P1538021-005-P-Rev0 dated 5 September 2016).

This report presents the ASS assessment findings for Stage 2 of the Auto Mall Precinct. The assessment results from the geotechnical and contamination investigation are provided in separate reports.

2.0 PROJECT DETAILS

An Auto Mall Precinct is proposed to be developed on an area between Moreton Drive, Nancy Bird Way and Airport Drive at the Brisbane Airport. Refer attached **Figure 1** for the location plan. The proposed development comprises a test track in the middle of the site, surrounded by development lots for future commercial use. Private roads are located around the perimeter of the site. An Energex substation and easement is present on the site.

At the time of writing, we understand that the site is to be developed in three stages as follows:

- Development Stage 1: Track, roads and selected development lots; lots north of the Energex easement between the track and Moreton Drive, and the Track and Nancy Bird Way.
- Development Stage 2: development lots south of the Energex easement.
- Development Stage 3: development lots north of the Energex easement between the track and Airport Drive.

Drainage channels will run along site perimeter, with invert levels as low as of RL 0.2 m AD in the western portion of the site. Site drainage channels will discharge into nearby surface water drains

The current staging plan is provided in **Appendix A**.

However, for consistency with previous works, <u>we refer to the portion of the site north of the Energex easement as Stage 1, and the portion to the south as Stage 2</u>. This report focusses on Stage 2 investigation results (hereinafter referred to as “the site”).

3.0 SITE DESCRIPTION

The site has an average existing surface level of about 2.4 m AD[1] and is currently heavily vegetated with casuarina forest and mangroves. Stage 2 of the development covers an area of approximately 500 m by 300 m.

Landers Pocket drain is the closet surface water body feature located at least 100m west of the project area. Surface water in Landers Pocket drain flows north east for about 1km from the site before discharging into Kedron Brook Floodway Drain. The Kedron Brook Floodway Drain discharges into Kedron Brook. The ultimate receiving environment of surface water from Kedron Brook is Moreton Bay. Proposed surface water drains will discharge into Landers Pocket drain.

[1] Aerodrome Datum

4.0 BACKGROUND INFORMATION

4.1 About Acid Sulfate Soils

Pyritic soils or ASS, were deposited in coastal zones throughout the world during the last 6,500 to 10,000 years. When drained for development or otherwise disturbed, the iron pyrite in these sediments oxidises producing sulfuric acid which subsequently lowers the pH in runoff and groundwater, leading to the release of toxic aluminium and iron from the sediments.

The formation of ASS is commonly the result of marine or estuarine deposition of sulfate and iron bearing sediments in the presence of an abundant source of readily decomposable organic matter resulting in the deposition of pyrite. This pyrite is stable within the soil so long as anoxic conditions prevail. Oxidation of this material produces acidic conditions, a process that typically occurs when the material is exposed to air, such as when raised above the water table by excavation, or by lowering the water table during dewatering processes. This can occur as a result of natural processes, for example as a result of fluctuations in the seawater level.

Acidic water introduced into coastal streams can cause fish kills, alterations to ecosystems and corrosion of civil structures. The source of the acid is naturally occurring pyrite. Environmental degradation occurs when this pyrite oxidises and sulfuric acid is produced and discharged into receiving waters. If receiving water in ASS areas is naturally saline, low level acidity naturally generated is often adequately buffered by the salinity and sometimes by the presence of alkaline calcareous materials present within the alluvial deposits.

Previous experience and available guidelines indicate that ASS are normally restricted in extent to recent (Holocene age) soil horizons deposited in a saline environment below RL 5 m AHD, with Actual ASS (AASS) often occurring at the top of the soil profile, being underlain by Potential ASS (PASS). ASS commonly occurs throughout lowland coastal areas of Australia.

4.2 Previous Investigations

Golder previously conducted a desktop assessment of ASS, groundwater and contamination for the Auto Mall Precinct in 2014 (reference 1460490-002-R-Rev0, February 2015) and an acid sulfate soil investigation for Stage 1of the Auto Mall Precinct for BAC (reference 1538021-005-R-RevA, February 2016). The findings of this desktop assessment and acid sulfate soil investigation indicated the following:

1460490-002-R-Rev0

- Sub-surface conditions typically comprise:

  Crust – A clay 'crust' layer up to 1.0 m bgl is present in some areas due to desiccation.

  Younger Alluvium (Holocene) – Highly compressible, inter-bedded sandy clays and clayey sands (Upper Holocene) and silty clays (Lower Holocene) extending to depths up to 30 m below ground level in places.

- Shallow surface fill may be present on the edges of the site with depths ranging from 0.15m to 1.1m. The fill was a mix of silts and sandy clays with some sands. The underlying natural profiles (upper Holocene alluvium) comprised variable light, medium and heavy clays and clayey sands, with some thin layers of peat and 'clean' sands. The natural soils were generally grey to dark grey and dark brown, indicative of ASS.
- Field screening and laboratory analysis of site soils indicated the presence of actual acid sulfate soils (AASS) typically from the surface to depth of about 0.6m to 1.1 m AHD underlain by potential acid sulfate soils (PASS) to depths of more than 1.2 m AHD (the limit of previous ASS investigations).
- The acid neutralising capacity (ANC) of the alluvium is generally not adequate to naturally buffer the actual and potential acidity produced.
- Net acidity in the AASS materials ranged from 0.08 S% to about 1.94 S%. Net acidity in the PASS materials ranged from 0.06 S% to about 2.55 S%.

1538021-005-R-RevA

- Investigation of the Stage 1 area indicated that AASS materials are present from the ground surface to levels about 0.8m AD and 1.2m AD and deeper in isolated pockets where previous localised ground disturbances may have occurred. AASS was detected in materials below the water table which indicated that the groundwater table had been historically lowered in this area. Calculated liming rates to neutralise net acidity in the identified AASS materials range from about 5 kg/m^3 to 30 kg/m^3.

- PASS materials underlie the AASS materials across the site. Net Acidity in PASS materials varied considerably across the Stage 1 area. Calculated liming rates to neutralise net acidity in the identified PASS materials towards the northern and southern ends of Stage 1 ranged from about 15 kg/m^3 to 60 kg/m^3. Through the centre of the Stage 1 area much higher net acidity was indicated with liming rates generally ranging from about 90 kg/m^3 to 150 kg/m^3 and as high as 320 kg/m^3 in one sample.

- Groundwater samples suggested a variable or historically disturbed environment. The groundwater had suitable available buffering capacity to maintain an acceptable pH level in the presence of minor acid generation at the northern end of Stage 1. However, groundwater samples from the remainder of the site indicated a buffering capacity inadequate to maintain stable, acceptable pH level in areas vulnerable to acidification. Acid conditions and aluminium concentrations above the Airports (Environmental Protection) Regulations accepted limit were detected in two groundwater samples.

4.3 Geology

Reference to the Geological Survey of Queensland 1:100,000 scale Brisbane Geological map (1990) indicates that all of the assessment site is located on alluvial deposits of Holocene age.

Holocene deposits are typically associated with ASS formation.

4.4 Hydrogeology

Previous investigations in this area (Stage 1 Investigation) encountered groundwater levels ranging from about 1.3m AD to 2.1m AD with a general direction of groundwater flow inferred as west towards Landers Pocket Drain.

4.5 Soil Landscape

The “Soil Landscapes of Brisbane and South-Eastern Environs, Queensland”, CSIRO 1:100,000 scale Map Sheet (1985) indicates that the assessment site is situated within an alluvial landscape likely to comprise the following soil group:

Woongoolba- WO

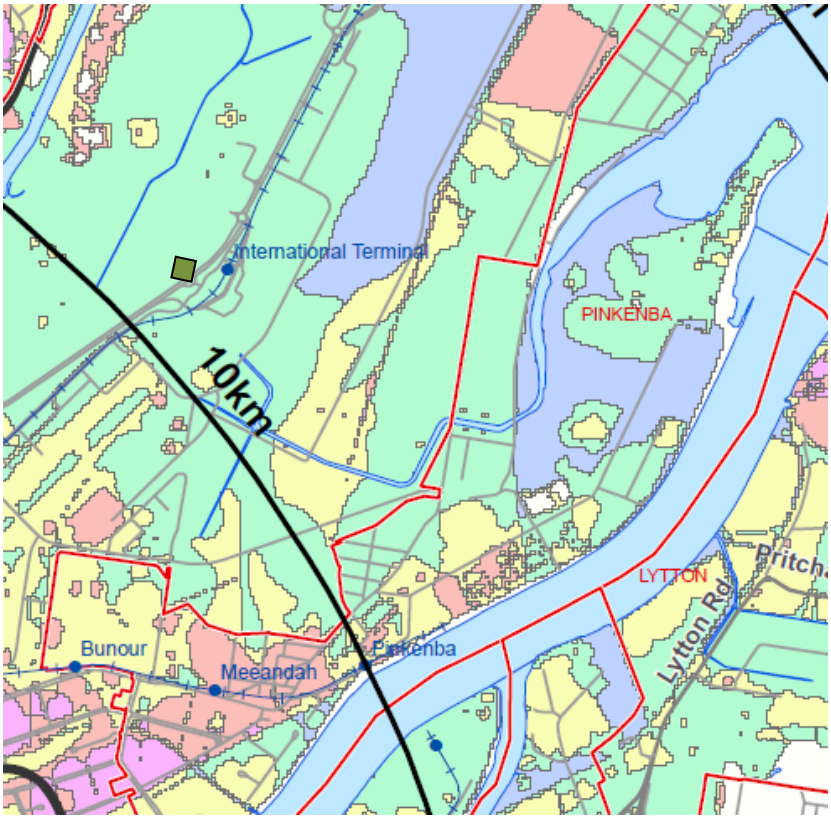
- Dominant Soil Group – ‘Humic gleys, peaty gleys’ and ‘solonchaks’

- Landscape and Parent Geology – Low (coastal) plains of alluvium and narrow depressions.

This soil profile is a young alluvium that frequently contains moderate to high concentrations of pyritic material and fine organic matter. This soil unit is generally associated with ASS.

4.6 ASS Risk Maps

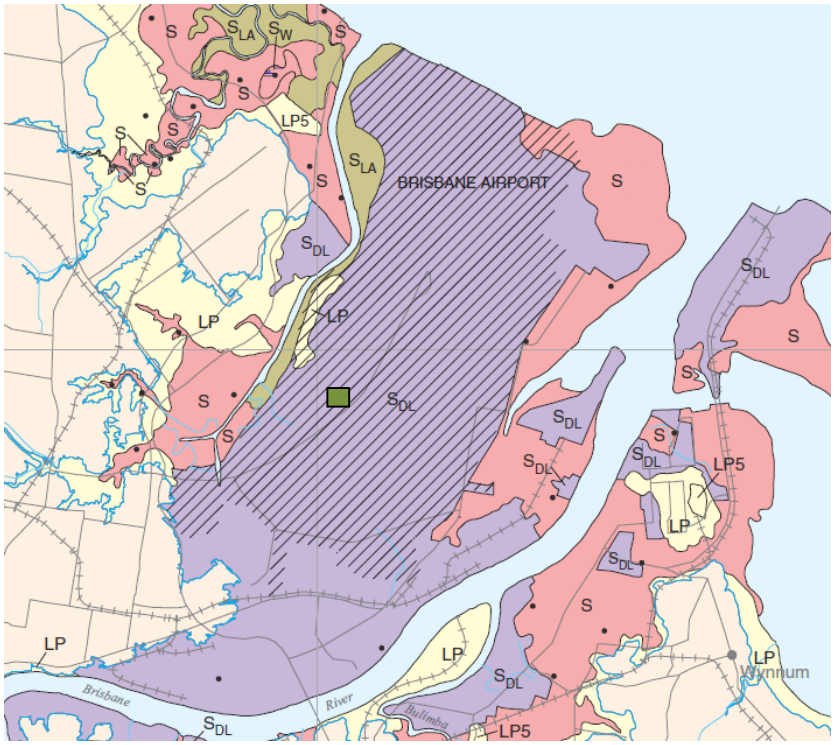
The Brisbane City Council “A Guide to the Likely Location of Acid Sulfate Soils in Brisbane” 1:50,000 scale risk map, indicates that the site is situated in an area mapped as having a ‘Very High’ risk of encountering ASS (refer below). The ‘Very High’ risk ASS soils at the site are likely to be associated with the recent alluvial soils.



ACID SULPHATE SOILS
HAZARD_RATING
- Extremely High
- Very High
- High
- Medium
- Low

Approximate location of site

Brisbane City Council ASS Hazard Risk Map for the Site



Approximate location of site

DNRM Acid Sulfate Soils Map for the Site

The Department of Natural Resources Mines (DNRM), 1:100,000 scale Map 1 “Acid Sulfate Soils –Tweed Heads to Redcliffe” (refer above), indicates that the site is situated in an area mapped as:

- SDL – Disturbed land (e.g. canal estates, marinas, aquaculture, quarry, urban, and industrial likely to contain ASS. (In some cases, partial or full treatment may have been undertaken). Limited field investigation.

5.0 REGULATORY FRAMEWORK

The following key regulatory drivers and guidance documents have been considered and utilised in conducting this assessment:

- *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland – 1998.* QASSIT
- *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines*. 2014. Department of Science, Information Technology, Innovation and the Arts, Queensland Government.

6.0 FIELDWORK

6.1 Soil Investigation

Details of the soil investigation methodology for the ASS investigation is summarised in Table 1 below.

Table 1: Field Activities - Drilling and Soil Sampling

Activity	Details
Drilling	Soil sampling for the acid sulfate soil assessment was conducted on 6 and 7 October 2016. The sampling was conducted in conjunction with contamination and geotechnical investigations for the site. ASS investigations included 10 boreholes identified as AM-BH10, AM-BH13, AM-BH14, AM-BH15, AM-BH16, AM-BH18, AM-BH24, AM-BH25, AM-BH26 and AM-BH29. The boreholes were advanced by a light tracked drilling rig to depths between 2.8 m and 3 m using hollow stem augers. Borehole drilling was carried out under the supervision of a geotechnical engineer from Golder. Soil descriptions for the lithology encountered during drilling are presented as borehole logs in Appendix A.
Borehole Survey	Upon completion of intrusive investigations selected locations were surveyed by MPA Surveyors on 14 October 2016 using differential GPS for easting, northing and RL.
Soil Sampling	Soil samples were collected at 0.25 m intervals from the surface to about 3 m below ground level (bgl) for ASS testing.
Samples Preservation and Handling	All ASS samples were labelled and sealed in plastic bags and refrigerated, then frozen within 24 hours, until laboratory testing was undertaken. All samples collected were sent to Australian Laboratory Services (ALS) of Brisbane under Chain of Custody (CoC) procedure (documents in Appendix B).
Soil Screening	All soil samples were screened using the pH_F/pH_{FOX} test method.
Soil Analysis	Soil samples were selected on the basis of the screening test results for quantitative laboratory analyses by the Chromium Suite test method (laboratory documents in Appendix B).

6.2 Groundwater Investigation

Details of groundwater investigation methodology are summarised in Table 2 below.

Table 2: Field Activities - Groundwater Well Installation and Sampling

Activity	Details
Monitoring Well Installation and Construction	Four boreholes (AM-BH10, AM-BH14, AM-BH15 and AM-BH16) were converted into new groundwater monitoring wells. Figure 1 displays the new monitoring well locations and existing wells installed around the site during previous investigations. New monitoring wells were constructed using 50 mm, Class 18 PVC threaded screen and casing. Construction details for monitoring wells are presented on borehole reports in Appendix A.
Well Development	Following installation the new wells were developed using a dedicated disposable bailer.
Well Gauging	Standing water levels (SWLs) were measured in new and selected existing wells on 25 October 2016 prior to sampling using a calibrated water level meter. Groundwater gauging data are presented in Section 8.2 Table 5.
Well Purging	The wells were sampled using low flow sampling methods and therefore purging was not required. Groundwater quality parameters and visual observations were recorded during purging. Purging continued until three well volumes were removed.
Groundwater Sampling	Groundwater samples were collected from all wells using low flow sampling and collection techniques.
Sample Preservation and Handling	Collected water samples were placed in laboratory supplied containers. Samples were placed with ice, in eskies whilst on-site and in transit to the laboratory. All samples were sent to Australian Laboratory Services (ALS) of Brisbane under Chain of Custody (CoC) procedures (documents in Appendix B).
Groundwater Analysis	Groundwater samples were analysed for ASS indicator parameters comprising pH, electrical conductivity, chloride, sulfate, alkalinity, acidity, dissolved iron, dissolved aluminium and total iron. Laboratory analytical reports are presented in Appendix B.

7.0 ASSESSMENT CRITERIA

Table 3 below shows the ASS action levels adopted in Queensland. These categories are used to identify whether action / management of ASS disturbances is required, based on 'net acidity' (derived from the results of the Chromium Suite analysis or the Chromium Suite test suites). For this assessment an action criteria of 0.03% Equivalent Sulfur has been adopted.

Table 3: ASS Action Criteria

Type of Material		Action Criteria 1-1000 tonnes disturbed		Action Criteria > 1000 tonnes disturbed (and major fill projects)	
		Existing + Potential Acidity		Existing + Potential Acidity	
Texture range McDonald et al. (1990)	**Approx. clay content (%)**	**Equivalent sulfur %S oxidisable**	**Equivalent acid mol H^+/ tonne**	**Equivalent sulfur %S oxidisable (oven-dry basis)**	**Equivalent acid mol H^+/ tonne (oven-dry basis)**
Coarse Texture Sands to loamy sands	≤5	0.03	18	0.03	18*
Medium Texture Sandy loams to light clays	5 – 40	0.06	36	0.03	18*
Fine Texture Medium to heavy clays and silty clays	≥40	0.10	62	0.03	18*

Table 4 below (*Treatment and management of soils and water in acid sulfate soil landscapes*, July 2011, revised 2015, WA DEC) provides a guide for the assessment of the buffering capacity of groundwater.

Table 4: General Indicators for Buffering Capacity

Class	Designation	Alkalinity		pH	Description
		mg/L	meq./L		
1	Very high alkalinity	>180	>3	>6.5	Adequate to maintain acceptable pH level in the future.
2	High alkalinity	60-80	1-3	>6.0	Adequate to maintain acceptable pH level in the future.
3	Moderate alkalinity	30-60	0.5-1.0	5.5-7.5	Inadequate to maintain stable, acceptable pH level in areas vulnerable to acidification.
4	Low alkalinity	10-30	0.2-0.5	5.0-6.0	Inadequate to maintain stable, acceptable pH level.
5	Very low alkalinity	<10	<0.2	<6.0	Unacceptable pH level under all circumstances.

8.0 INVESTIGATION FINDINGS

8.1 Subsurface Conditions

Detailed information of subsurface conditions encountered at the site are described in Borehole Logs (Appendix A).

A summary of typical subsurface conditions encountered is as follows:

- **Crust** – A desiccated layer generally comprising loose silty sand and sandy clay generally between 0.1 to 0.3 m bgl, over
- **Recent Alluvium (Holocene)** – Compressible, inter-bedded sandy clays, clayey sandy gravels and clayey sands (Upper Holocene) from approximately 0 to 3 m bgl (target depth).

8.2 Groundwater Levels

Table 5 summarises the groundwater measurements for the current investigation. Based on the measured groundwater levels, the general flow direction beneath the site is interpreted to be west.

Table 5: Summary of Groundwater Level Observations

Well ID	Depth to Groundwater (m bgl)	Groundwater Level (m AD)	Date and Time of Observations
AM-BH10	1.19	1.18	25/10/2016 AT 10:50 AM
AM-BH14	2.57	1.51	25/10/2016 AT 09:10 AM
AM-BH15	1.90	1.24	25/10/2016 AT 10:00 AM
AM-BH16	1.55	0.87	25/10/2016 AT 08:10 AM

8.3 ASS Screening Tests

The pH_F/pH_{FOX} screening method consists of two steps; determining the field pH of a 1:5 soil/water suspension, and by the addition of 30% Hydrogen Peroxide, allowing the sample time to oxidise, before determining the pH_{FOX} (pH after oxidation) of the reacted sample. A significant drop in pH is indicative of potential acidity and a low initial pH, indicative of actual acidity.

The tests are used to indicate the likelihood of a soil containing actual acidity (i.e. Actual ASS [AASS]) and/or potential acidity (i.e. Potential ASS [PASS]).

The following rating is used in the assessment of samples in the attached table:

1) AASS potential is indicated by; Nil ($pH_F > 4.5$), Medium (pH_F 4.5< $pH_F \leq 4$), High ($pH_F < 4$)

2) PASS potential is indicated by: Low ($pH_{FOX} > 3$), Medium ($pH_{FOX} > 3$ and difference between pH_{FOX} and pH_{FOX} is greater than 3, High ($pH_{FOX} < 3$).

3) Where the pH_{FOX} value is significantly less than the reported pH_F, this may indicate the presence of PASS, with larger reductions in pH_{FOX} generally providing a stronger indication of potential PASS.

The strength of reaction is also an indicator of likely PASS.

Field screening test results on recovered soil samples during the investigation are presented in Appendix B and summarised in Table 6 below.

Table 6: Acid Sulfate Soil Screening Test Results

Location ID	Sample Depth Range (m bgl)			Sample Depth Range (m AD)			Sampled Date	Soil Type	pH (F)	AASS Likelihood[1]	pH (Field ox)	Reaction Rate[2]	PASS Likelihood[3]
									pH Unit		pH_Units		
AM-BH10	0	-	0.25	2.37	-	2.12	6/10/2016	Silty SAND	8	Nil	4.1	3	Medium
AM-BH10	0.25	-	0.5	2.12	-	1.87	6/10/2016	CLAY	7.2	Nil	1.7	4	High
AM-BH10	0.5	-	0.75	1.87	-	1.62	6/10/2016	CLAY	7.8	Nil	2.9	3	High
AM-BH10	0.75	-	1	1.62	-	1.37	6/10/2016	CLAY	7.7	Nil	2.7	3	High
AM-BH10	1	-	1.25	1.37	-	1.12	6/10/2016	CLAY	7.8	Nil	2.8	3	High
AM-BH10	1.25	-	1.5	1.12	-	0.87	6/10/2016	CLAY	7.8	Nil	1.7	4	High
AM-BH10	1.5	-	1.75	0.87	-	0.62	6/10/2016	CLAY	7.5	Nil	1.7	4	High
AM-BH10	1.75	-	2	0.62	-	0.37	6/10/2016	CLAY	7.6	Nil	1.8	4	High
AM-BH10	2	-	2.25	0.37	-	0.12	6/10/2016	CLAY	7.6	Nil	1.6	4	High
AM-BH10	2.25	-	2.5	0.12	-	-0.13	6/10/2016	CLAY	7.7	Nil	1.6	4	High
AM-BH10	2.5	-	2.75	-0.13	-	-0.38	6/10/2016	CLAY	7.4	Nil	1.4	4	High
AM-BH10	2.75	-	3	-0.38	-	-0.63	6/10/2016	CLAY	7.6	Nil	1.8	4	High
AM-BH13	0	-	0.25	4.22	-	3.97	6/10/2016	Silty SAND	7.4	Nil	5.2	1	Low
AM-BH13	0.25	-	0.5	3.97	-	3.72	6/10/2016	Sandy CLAY	7.6	Nil	5.6	2	Low
AM-BH13	0.5	-	0.75	3.72	-	3.47	6/10/2016	Sandy CLAY	7.6	Nil	5.7	2	Low
AM-BH13	0.75	-	1	3.47	-	3.22	6/10/2016	Sandy Clayey GRAVEL	6.9	Nil	5.2	2	Low
AM-BH13	1	-	1.25	3.22	-	2.97	6/10/2016	Clayey Sandy GRAVEL	7.1	Nil	4.4	2	Low
AM-BH13	1.25	-	1.5	2.97	-	2.72	6/10/2016	Clayey Sandy GRAVEL	7.4	Nil	4.2	3	Medium
AM-BH13	1.5	-	1.75	2.72	-	2.47	6/10/2016	Silty CLAY	7.8	Nil	4.4	3	Medium
AM-BH13	1.75	-	2	2.47	-	2.22	6/10/2016	Silty CLAY	5.9	Nil	3	3	High
AM-BH13	2	-	2.25	2.22	-	1.97	6/10/2016	Silty CLAY	5	Nil	3.4	4	Low
AM-BH13	2.25	-	2.5	1.97	-	1.72	6/10/2016	Silty CLAY	5.7	Nil	3.3	4	Low
AM-BH13	2.5	-	2.75	1.72	-	1.47	6/10/2016	Clayey SAND	5.7	Nil	3.4	2	Low
AM-BH13	2.75	-	3	1.47	-	1.22	6/10/2016	Clayey SAND	6.5	Nil	4.8	2	Low
AM-BH14	0	-	0.25	4.08	-	3.83	6/10/2016	Silty SAND	7	Nil	4.7	3	Low
AM-BH14	0.25	-	0.5	3.83	-	3.58	6/10/2016	Clayey GRAVEL	7.8	Nil	6	3	Low
AM-BH14	0.5	-	0.75	3.58	-	3.33	6/10/2016	CLAY	5.9	Nil	2.7	4	High
AM-BH14	0.75	-	1	3.33	-	3.08	6/10/2016	Sandy Silty GRAVEL	5.3	Nil	2.4	4	High
AM-BH14	1	-	1.25	3.08	-	2.83	6/10/2016	Sandy Silty GRAVEL	5.2	Nil	2.5	4	High

Location ID	Sample Depth Range (m bgl)			Sample Depth Range (m AD)			Sampled Date	Soil Type	pH (F) pH Unit	AASS Likelihood[1]	pH (Field ox) pH_Units	Reaction Rate[2]	PASS Likelihood[3]
AM-BH14	1.25	-	1.5	2.83	-	2.58	6/10/2016	Sandy CLAY	8	Nil	3.2	3	Medium
AM-BH14	1.5	-	1.75	2.58	-	2.33	6/10/2016	CLAY	5.5	Nil	2.9	3	High
AM-BH14	1.75	-	2	2.33	-	2.08	6/10/2016	Silty CLAY	5.7	Nil	3	3	Low
AM-BH14	2	-	2.25	2.08	-	1.83	6/10/2016	CLAY	6.8	Nil	5	2	Low
AM-BH14	2.25	-	2.5	1.83	-	1.58	6/10/2016	Sandy CLAY	7.2	Nil	5.6	2	Low
AM-BH14	2.5	-	2.75	1.58	-	1.33	6/10/2016	Clayey SAND	7.2	Nil	5.7	2	Low
AM-BH14	2.75	-	3	1.33	-	1.08	6/10/2016	Clayey SAND	7.3	Nil	5.7	2	Low
AM-BH15	0	-	0.25	3.14	-	2.89	7/10/2016	Silty SAND	7	Nil	1.8	3	High
AM-BH15	0.25	-	0.5	2.89	-	2.64	7/10/2016	Silty CLAY	8	Nil	5.4	3	Low
AM-BH15	0.5	-	0.75	2.64	-	2.39	7/10/2016	CLAY	6.5	Nil	4.4	2	Low
AM-BH15	0.75	-	1	2.39	-	2.14	7/10/2016	CLAY	7.2	Nil	5	3	Low
AM-BH15	1	-	1.25	2.14	-	1.89	7/10/2016	CLAY	7	Nil	4.8	2	Low
AM-BH15	1.25	-	1.5	1.89	-	1.64	7/10/2016	CLAY	7.3	Nil	4.8	3	Low
AM-BH15	1.5	-	1.75	1.64	-	1.39	7/10/2016	CLAY	7.1	Nil	4.6	3	Low
AM-BH15	1.75	-	2	1.39	-	1.14	7/10/2016	CLAY	6.9	Nil	4.4	3	Low
AM-BH15	2	-	2.25	1.14	-	0.89	7/10/2016	Sandy CLAY	6.9	Nil	4.2	3	Low
AM-BH15	2.25	-	2.5	0.89	-	0.64	7/10/2016	Sandy CLAY	7	Nil	4.4	3	Low
AM-BH15	2.5	-	2.75	0.64	-	0.39	7/10/2016	Clayey SAND	7	Nil	2.5	4	High
AM-BH15	2.75	-	3	0.39	-	0.14	7/10/2016	CLAY	7.3	Nil	2.5	4	High
AM-BH16	0	-	0.25	2.42	-	2.17	7/10/2016	Silty CLAY	7.2	Nil	3.1	3	Medium
AM-BH16	0.25	-	0.5	2.17	-	1.92	7/10/2016	CLAY	6.3	Nil	4.3	2	Low
AM-BH16	0.5	-	0.75	1.92	-	1.67	7/10/2016	CLAY	4.5	Nil	2.6	2	High
AM-BH16	0.75	-	1	1.67	-	1.42	7/10/2016	CLAY	5.3	Nil	3.2	2	Low
AM-BH16	1	-	1.25	1.42	-	1.17	7/10/2016	CLAY	5.9	Nil	3.8	2	Low
AM-BH16	1.25	-	1.5	1.17	-	0.92	7/10/2016	CLAY	6.4	Nil	3.4	3	Medium
AM-BH16	1.5	-	1.75	0.92	-	0.67	7/10/2016	CLAY	6.7	Nil	3.5	3	Medium
AM-BH16	1.75	-	2	0.67	-	0.42	7/10/2016	CLAY	6.3	Nil	3.7	3	Low
AM-BH16	2	-	2.25	0.42	-	0.17	7/10/2016	CLAY	6.2	Nil	3.6	3	Low
AM-BH16	2.25	-	2.5	0.17	-	-0.08	7/10/2016	Clayey SAND	6.5	Nil	3.3	3	Medium
AM-BH16	2.5	-	2.75	-0.08	-	-0.33	7/10/2016	Sandy CLAY	6.4	Nil	1.7	4	High
AM-BH16	2.75	-	3	-0.33	-	-0.58	7/10/2016	Clayey SAND	7.1	Nil	2.2	4	High
AM-BH18	0	-	0.25	2.75	-	2.5	6/10/2016	Silty Sandy GRAVEL	7	Nil	3.6	3	Medium
AM-BH18	0.25	-	0.5	2.5	-	2.25	6/10/2016	Silty Sandy GRAVEL	4.7	Nil	2.9	3	High
AM-BH18	0.5	-	0.75	2.25	-	2	6/10/2016	Sandy CLAY	4.3	Medium	2.8	3	High

Location ID	Sample Depth Range (m bgl)			Sample Depth Range (m AD)			Sampled Date	Soil Type	pH (F) pH Unit	AASS Likelihood[1]	pH (Field ox) pH_Units	Reaction Rate[2]	PASS Likelihood[3]
AM-BH18	0.75	-	1	2	-	1.75	6/10/2016	CLAY	4.3	Medium	2.7	3	High
AM-BH18	1	-	1.25	1.75	-	1.5	6/10/2016	CLAY	4.1	Medium	2.6	3	High
AM-BH18	1.25	-	1.5	1.5	-	1.25	6/10/2016	Sandy CLAY	4	Medium	2.3	3	High
AM-BH18	1.5	-	1.75	1.25	-	1	6/10/2016	Sandy CLAY	4.2	Medium	2.6	3	High
AM-BH18	1.75	-	2	0.75	-	0.5	6/10/2016	Sandy CLAY	4.3	Medium	2.7	3	High
AM-BH18	2	-	2.25	0.5	-	0.25	6/10/2016	Clayey SAND	4.5	Medium	2.7	3	High
AM-BH18	2.25	-	2.5	0.25	-	0	6/10/2016	Clayey SAND	4.8	Nil	3	3	Low
AM-BH18	2.5	-	2.75	0	-	-0.25	6/10/2016	Clayey SAND	4.7	Nil	2.9	3	High
AM-BH18	2.75	-	3	-0.25	-	-0.5	6/10/2016	Sandy CLAY	5.2	Nil	3.2	3	Low
AM-BH24	0	-	0.25	4.19	-	3.94	6/10/2016	Silty SAND	7	Nil	4.4	3	Medium
AM-BH24	0.25	-	0.5	3.94	-	3.69	6/10/2016	Silty Sandy GRAVEL	9.1	Nil	9	4	Medium
AM-BH24	0.5	-	0.75	3.69	-	3.44	6/10/2016	Clayey GRAVEL	8	Nil	7.1	4	Medium
AM-BH24	0.75	-	1	3.44	-	3.19	6/10/2016	CLAY	7.6	Nil	3.4	3	Medium
AM-BH24	1	-	1.25	3.19	-	2.94	6/10/2016	CLAY	7.6	Nil	5.4	3	Low
AM-BH24	1.25	-	1.5	2.94	-	2.69	6/10/2016	Clayey Sandy Silt	6.8	Nil	2.7	3	High
AM-BH24	1.5	-	1.75	2.69	-	2.44	6/10/2016	CLAY	5.6	Nil	2.9	3	High
AM-BH24	1.75	-	2	2.44	-	2.19	6/10/2016	CLAY	5	Nil	3	4	Medium
AM-BH24	2	-	2.25	2.19	-	1.94	6/10/2016	CLAY	5.4	Nil	2.7	3	High
AM-BH24	2.25	-	2.5	1.94	-	1.69	6/10/2016	CLAY	5.2	Nil	3	3	Medium
AM-BH24	2.5	-	2.75	1.69	-	1.44	6/10/2016	Clayey SAND	5.8	Nil	3.5	3	Low
AM-BH24	2.75	-	3	1.44	-	1.19	6/10/2016	Clayey SAND	6.8	Nil	5.1	3	Low
AM-BH25	0	-	0.25	3.79	-	3.54	7/10/2016	silty SAND	6.7	Nil	3.8	3	Low
AM-BH25	0.25	-	0.5	3.54	-	3.29	7/10/2016	Silty CLAY	4.3	Medium	4.6	2	Low
AM-BH25	0.5	-	0.75	3.29	-	3.04	7/10/2016	Silty CLAY	5.9	Nil	4	3	Low
AM-BH25	1.5	-	1.75	3.04	-	2.79	7/10/2016	CLAY	5.9	Nil	3.2	3	Low
AM-BH25	1.75	-	2	2.79	-	2.54	7/10/2016	CLAY	6	Nil	3.5	3	Low
AM-BH25	2	-	2.25	2.54	-	2.29	7/10/2016	CLAY	6.1	Nil	4.1	3	Low
AM-BH25	2.25	-	2.5	2.29	-	2.04	7/10/2016	Sandy CLAY	4.7	Nil	2.9	2	High
AM-BH25	2.5	-	2.75	2.04	-	1.79	7/10/2016	Sandy CLAY	5.9	Nil	4.5	1	Low
AM-BH25	2.75	-	3	1.79	-	1.54	7/10/2016	Clayey SAND	6.6	Nil	5.4	2	Low
AM-BH26	0	-	0.25	4.03	-	3.78	6/10/2016	Silty SAND	7.1	Nil	4.8	2	Low
AM-BH26	0.25	-	0.5	3.78	-	3.53	6/10/2016	Silty Sandy GRAVEL	8.2	Nil	6.3	3	Low
AM-BH26	0.5	-	0.75	3.53	-	3.28	6/10/2016	GRAVEL	7.8	Nil	5.8	3	Low

Location ID	Sample Depth Range (m bgl)			Sample Depth Range (m AD)			Sampled Date	Soil Type	pH (F) pH Unit	AASS Likelihood[1]	pH (Field ox) pH_Units	Reaction Rate[2]	PASS Likelihood[3]
AM-BH26	0.75	-	1	3.28	-	3.03	6/10/2016	Silty Sandy GRAVEL	7.5	High	5.5	3	Low
AM-BH26	1	-	1.25	3.03	-	2.78	6/10/2016	GRAVEL	7.3	Nil	5.4	3	Low
AM-BH26	1.25	-	1.5	2.78	-	2.53	6/10/2016	Silty CLAY	6.8	Nil	5.4	3	Low
AM-BH26	1.5	-	1.75	2.53	-	2.28	6/10/2016	CLAY	6.8	Medium	4.2	3	Low
AM-BH26	1.75	-	2	2.28	-	2.03	6/10/2016	CLAY	7.8	Medium	2.9	3	High
AM-BH26	2	-	2.25	2.03	-	1.78	6/10/2016	CLAY	5	Medium	3	3	Medium
AM-BH26	2.25	-	2.5	1.78	-	1.53	6/10/2016	Clayey SAND	6.5	Medium	4.8	2	Low
AM-BH26	2.5	-	2.75	1.53	-	1.28	6/10/2016	Clayey SAND	7.4	Nil	5.3	2	Low
AM-BH26	2.75	-	3	1.28	-	1.03	6/10/2016	Clayey SAND	7.6	Medium	5.8	2	Low
AM-BH29	0	-	0.25	2.95	-	2.7	7/10/2016	Silty SAND	8.2	Nil	6.2	3	Low
AM-BH29	0.25	-	0.5	2.7	-	2.45	7/10/2016	Silty CLAY	7.9	Nil	5.3	3	Low
AM-BH29	0.5	-	0.75	2.45	-	2.2	7/10/2016	Silty CLAY	5.9	Nil	3.7	3	Low
AM-BH29	0.75	-	1	2.2	-	1.95	7/10/2016	Silty CLAY	4.5	Nil	2.8	3	High
AM-BH29	1	-	1.25	1.95	-	1.7	7/10/2016	Sandy CLAY	4.1	Medium	2.4	3	High
AM-BH29	1.25	-	1.5	1.7	-	1.45	7/10/2016	Sandy CLAY	4.3	Medium	2.6	3	High
AM-BH29	1.5	-	1.75	1.45	-	1.2	7/10/2016	Clayey SAND	5.9	Nil	3.5	3	Low
AM-BH29	1.75	-	2	1.2	-	0.95	7/10/2016	Clayey SAND	6.2	Nil	3.6	3	Low
AM-BH29	2	-	2.25	0.95	-	0.7	7/10/2016	Clayey SAND	6.4	Nil	3.8	3	Low
AM-BH29	2.25	-	2.5	0.7	-	0.45	7/10/2016	Clayey SAND	6.6	Nil	3.7	3	Low
AM-BH29	2.5	-	2.75	0.45	-	0.2	7/10/2016	Clayey SAND	7.2	Nil	2.1	3	High
AM-BH29	2.75	-	3	0.2	-	-0.05	7/10/2016	Sandy CLAY	7.5	Nil	2.4	4	High

The screening test results from the Stage 2 investigation indicated the following:

- The pH_F values materials ranged between 4.0 and 9.1. The possible presence of AASS was indicated at AM-BH18 (0.50-2.25m), AM-BH25 (0.25-0.50m), AM-BH26 (1.50-3.00m) and AM-BH29 (1.0-1.25m) which extends below the measured water table.
- The pH_{FOX} values suggest a high potential for PASS at all locations except for AMBH25 and AMBH26. The high potential for PASS was recorded at the remaining locations at the following depth ranges:
  - AMBH10: 0.25 mbgl to 3.00 mbgl
  - AMBH13: 1.75 mbgl to 2.00 mbgl
  - AMBH14: 0.50 mbgl to 1.75 mbgl
  - AMBH15: 0.00 mbgl to 0.25 mbgl and 2.50 mbgl to 3.0 mbgl
  - AMBH16: 0.50 mbgl to 0.75 mbgl and 2.75 mbgl to 3.0 mbgl
  - AMBH18: 0.25 mbgl to 2.75 mbgl
  - AMBH24: 1.25 mbgl to 2.75 mbgl
  - AMBH29: 0.75 mbgl to 1.50 mbgl and 2.50 mbgl to 3.0 mbgl

8.4 Chromium Suite Analysis

Based on screening test results, a total of 30 soil samples (about 2 to 3 samples per borehole) were selected for laboratory analysis by the Chromium Suite test methods. The soil samples were selected to target field screening tests suggesting high AASS or PASS potential and to provide a broad coverage of the soil profile.

Results of laboratory testing including acid base accounting to calculate net acidity are summarised in Table 7.

Laboratory results indicated:

- The presence of AASS was confirmed in layers sometimes inconsistent with indications from the field screening tests. Layers of AASS were indicated in AM-BH10, AM-BH13, AM-BH14, AM-BH16, AM-BH24, AM-BH25 and AM-BH29 where field screening had not previously indicated AASS. Closer inspection of these results suggests that minor oxidisation may have occurred these samples at the laboratory between field screening and the Chromium Suite testing – for the purposes of this assessment we have considered these suspect results to indicate PASS rather than AASS. Calculated liming rates to address existing acidity in AASS materials range from about 3 kg/m^3 to 13 kg/m^3.
- Net Acidity in PASS materials varies considerably across the site. In general the identified PASS material towards the southwestern quadrant have indicated liming rates ranging from about 3 to 14.2 kg/m^3. Through the centre of the site (AM-BH18) a liming rate in shallow material of 12.9 kg/m^3 was calculated. The highest net acidities were recorded along the north-western boundary at AM-BH10 which require a liming rate of about 284 kg/m^3)

Table 7: Summary of Acid Sulfate Soil Test Results (Chromium Suite)

Test Location	Depth Range (m - BGL)		Material Description	pH_{KCl}	sTAA (%S)	S_{NAS} (if pH less than 4.5)	Existing Acidity %S (sTAA + 0.75 x S_{NAS})	Chromium Reducible Sulfur (S_{CR}) %S	Acid Neutralising Capacity %CaCO3 (if pH more than 6.5)	Net Acidity %S (S_{CR}+Existing Acidity - ANC/FF)	Is This AASS	Is This PASS	Liming Rate for Existing Acidity (Neutralises AASS only) (kg/m3)	Liming Rate for Net Acidity (Neutralises both AASS & PASS) (kg/m3)
AM-BH10	0.00	0.25	CLAY	6.3	< 0.020		0.000	0.006		0.006	No	No	NA	NA
AM-BH10	1.50	1.75	CLAY	5.1	0.04		0.040	1.7		1.740	YES	YES	3.0	131.6
AM-BH10	2.50	2.75	CLAY	4.8	0.07		0.070	3.69		3.760	YES	YES	5.3	284.3
AM-BH13	1.00	1.25	Clayey Sandy GRAVEL	6.4	< 0.02		0.000	0.012		0.012	No	No	NA	NA
AM-BH13	1.75	2.00	Silt CLAY	4.4	0.11	< 0.02	0.110	0.078		0.188	YES	YES	8.3	14.2
AM-BH13	2.50	2.75	Clayey SAND	5.0	0.03		0.030	0.006		0.036	YES	No	2.3	2.7
AM-BH14	0.75	1.00	Sandy Silty GRAVEL	5.8	< 0.02		0.000	0.08		0.080	No	YES	NA	6.0
AM-BH14	1.50	1.75	CLAY	4.6	0.08		0.080	0.006		0.086	YES	No	6.0	6.0
AM-BH14	2.25	2.50	Sandy CLAY	6.1	< 0.02		0.000	0.005		0.005	No	No	NA	NA
AM-BH15	0.00	0.25	Silty SAND	5.8	< 0.02		0.000	0.036		0.036	No	YES	NA	2.7
AM-BH15	1.75	2.00	CLAY	6.0	< 0.02		0.000	< 0.005		0.000	No	No	NA	NA
AM-BH15	2.50	2.75	Clayey SAND	6.1	< 0.02		0.000	0.016		0.016	No	No	NA	NA
AM-BH16	0.00	0.25	Silty CLAY	8.6	< 0.02		0.000	0.219	10.6	-2.045	No	YES	No Additional Lime Required	No Additional Lime Required
AM-BH16	0.50	0.75	CLAY	4.5	0.1		0.100	0.008		0.108	YES	No	7.6	7.6
AM-BH16	2.50	2.75	Sandy CLAY	8.4	< 0.02		0.000	0.358	1.35	0.070	No	YES	NA	5.3
AM-BH18	0.75	1.00	CLAY	4.3	0.17	< 0.02	0.170	0.021		0.191	YES	No	12.9	12.9
AM-BH18	1.25	1.50	Sandy CLAY	4.6	0.06		0.060	< 0.005		0.060	YES	No	4.5	4.5
AM-BH18	2.00	2.25	Clayey SAND	4.7	0.05		0.050	< 0.005		0.050	YES	No	3.8	3.8
AM-BH24	0.75	1.00	CLAY	8.1	< 0.02		0.000	0.102	3.14	-0.569	No	YES	No Additional Lime Required	No Additional Lime Required
AM-BH24	1.50	1.75	CLAY	4.2	0.14	< 0.02	0.140	0.026		0.166	YES	No	10.6	10.6
AM-BH24	2.25	2.50	CLAY	5.5	0.02		0.020	0.008		0.028	No	No	NA	NA
AM-BH25	0.25	0.50	Silty CLAY	7.9	< 0.02		0.000	0.013	3.57	-0.750	No	No	No Additional Lime Required	NA
AM-BH25	1.50	1.75	CLAY	8.4	< 0.02		0.000	0.078	3.32	-0.631	No	YES	No Additional Lime Required	No Additional Lime Required
AM-BH25	2.25	2.50	Sandy CLAY	6.5	< 0.02		0.000	< 0.005	0.38	-0.081	No	No	No Additional Lime Required	NA
AM-BH26	0.00	0.25	Sailty SAND	6.6	< 0.02		0.000	0.028	0.63	-0.107	No	No	No Additional Lime Required	NA
AM-BH26	1.75	2.00	CLAY	8.0	< 0.02		0.000	0.418	3.42	-0.313	No	YES	No Additional Lime Required	No Additional Lime Required
AM-BH26	2.00	2.25	CLAY	4.7	0.04		0.040	0.006		0.046	YES	No	3.0	3.0
AM-BH29	0.75	1.00	Silty CLAY	4.4	0.1	< 0.02	0.100	0.016		0.116	YES	No	7.6	7.6
AM-BH29	1.00	1.25	Sandy CLAY	4.3	0.11	0.04	0.140	0.105		0.245	YES	YES	10.6	18.5
AM-BH29	2.50	2.75	Clayey SAND	5.5	< 0.020		0.000	0.245		0.245	No	YES	NA	18.5

Note: *Equivalent oxidisable sulfur calculated as TAA/30.59
Liming rates assume a bulk density of 1.60t/m3
Fineness Factor: 1.5

8.5 Groundwater Quality

The laboratory results of groundwater analysed for ASS parameters presented in Appendix B and summarised in Table 8, below.

Table 8: Groundwater Quality Test Results

Sample Location	Sample Dates	pH*	EC mS/cm	Dissolved Fe mg/L	Dissolved Al mg/L	Cl^-: SO_4^{++} mgL (Ratio)	Total Acidity mg/L	Total Alkalinity mg/L
AM-MW10	25/10/16	6.99	51.4	<0.05	<0.05	8.6	260	297
AM-MW14	25/10/16	6.26	20.4	87.6	0.08	2.6	570	362
AM-MW15	25/10/16	6.43	9.12	7.58	<0.01	2.4	218	185
AM-MW16	25/10/16	6.06	14.8	87.6	<0.01	2.78	388	95

Notes: Rainfall in the 30 days prior to 25/10/2016 sampling round was 75.6mm.

The laboratory results indicated:

- Electrical conductivity ranging from 9 to 51 mS/cm indicating brackish to saline water conditions.
- pH levels ranging from 6.06 to 6.99 indicating slightly acidic to near neutral conditions.
- Total acidity exceeds total alkalinity in three of the four groundwater samples. The fourth sample has alkalinity marginally higher than acidity. These results indicate a very low buffering capacity across the site. The groundwater is interpreted to have a Class 4 buffering capacity (i.e. inadequate to maintain stable, acceptable pH level in areas vulnerable to acidification).
- Dissolved aluminium concentrations of greater than about 1 mg/L in groundwater may be an indicator of AASS. Concentrations were below the laboratory detection limit, with the exception of AM-BH14 (0.08 mg/L).
- Dissolved iron concentrations ranged from <0.05 to 87.6 mg/L.
- The Chloride:Sulfate (Cl^-: SO_4^{++}) ratios general ndicate past oxidation of PASS in this area.

Overall the groundwater results suggest a variable or historically disturbed environment at the investigation locations.

9.0 CONCLUSIONS

The following conclusions have been drawn from the ASS assessment at the Auto Precinct Stage 2 area:

- Investigations of the Stage 2 area indicated that AASS materials are present from the ground surface to levels about -0.13 m AD. AASS has been detected in materials below the water table (at AM-BH10) which indicates that the groundwater table has been historically lowered in this area. Calculated liming rates to neutralise existing acidity in the identified AASS materials range from about 3 kg/m^3 to 13 kg/m^3.
- Investigations of the Stage 2 area indicated that PASS materials are present approximately from 3.33 AD to -0.33 AD and throughout the sampling locations aside from AMBH25. In general the PASS material towards the southwestern quadrant have indicated liming rates ranging from about 3 to 14.2 kg/m^3. Through the centre of the site (AM-BH18) a liming rate in shallow material of 12.9 kg/m^3 was calculated. The highest net acidities were recorded along the northwestern boundary at AM-BH10 which recorded a projected liming requirement of up to about 284 kg/m^3 at AMBH10 (2.50-2.75).
- Acid conditions and aluminium concentrations above the Airports (Environmental Protection) Regulations accepted limit were not detected in the groundwater samples analysed. Groundwater samples suggested that whilst the groundwater currently has a pH in the slightly acidic to neutral range, it generally has inadequate buffering capacity to maintain stable, acceptable pH level in the presence of minor acid generation.

The presence of ASS and low buffering capacity of groundwater have the following implications to the currently proposed development

- All site excavations will disturbed ASS and will require management measures including lime treatment of excavated spoil. Excavations may result in AASS and PASS spoil which may require separate management measures.
- Filling and surcharging/preloading of the site will result in further AASS being “pushed” below the water table. Surcharging/preloading will also cause a slight mounding of the local water table and result in the temporary saturation of AASS. Both of these issues will result in the release of acid to the groundwater and the subsequent stripping and mobilisation of metals. Acid and metals impacted groundwater may discharge to the surface and/or shallow drains immediately surrounding the site and migrate towards (and discharge into) Landers Pocket Drain. Potential mitigation/management strategies for this issue include:
    - Construction of a lime trench along the western site boundary (or eastern side of the proposed drain along this boundary) to buffer acidic groundwater moving off site. The lime trench would need to extend below the AASS/PASS interface and would comprise a slot trench filled with a mix of agricultural lime and limestone chips.
    - Placement of a 10m wide strip of surface lime ‘guard layer’ along the eastern and southern perimeters of the site under the edge of the fill embankment, prior to filling. This is to neutralise acidic seepage/runoff leaving the site along these boundaries.
    - Installation of limestone filled ‘check’ dams across internal surface drains during construction period and at the end of drains upstream of any connection with Landers Pocket Drain, to neutralise acid ‘flushes’ that may occur. Note that the limestone chips would require monitoring and regular replacement.
    - Monitoring and possible treatment of seepage water collected from any wick drains employed, before discharge off site.
- Formation of unlined drains below the current groundwater table may result in a zone of localised groundwater depression. Acid and metals impacted groundwater may discharge into the drain. Potential mitigation/management strategies for this issue include:
    - Option 1: Construct a concrete lined drain to maintain groundwater levels outside of the drain and prevent inflow of acidic and degraded groundwater.
    - Option 2: Placement of a lime trench on either side of the drainage channel to neutralise groundwater inflow (this may still allow iron and other metals to floc in the drain and could require additional management measures).

10.0 RECOMMENDATIONS

Based on the investigation findings at the Stage 2 Auto Mall Precinct, it is recommended that:

- A site specific ASS EMP be prepared to manage development disturbances across the Stage 2 area and surcharging practices.

11.0 IMPORTANT INFORMATION

Your attention is drawn to the document titled - “Important Information Relating to this Report”, which is included in Appendix C of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

Report Signature Page

GOLDER ASSOCIATES PTY LTD

Caitriona Coyle
Senior Environmental Engineer

Paul Scells
Principal

CMC/PKS/cmc

A.B.N. 64 006 107 857

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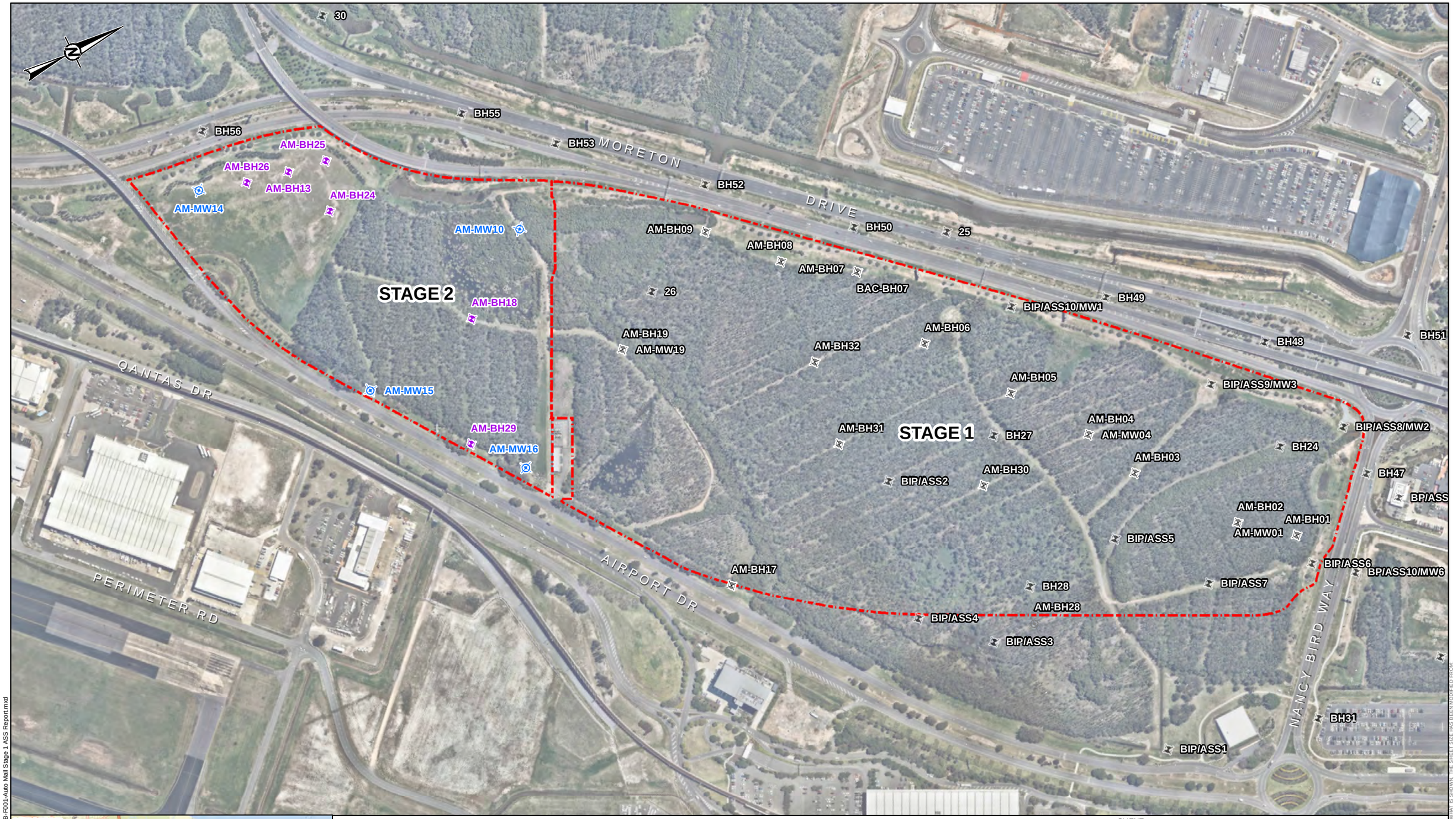
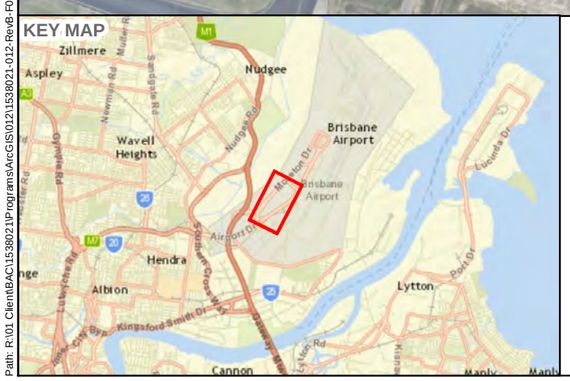
FIGURE





LEGEND

Previous Investigations

- Acid Sulfate Soils
- Monitoring Well

Previous Investigation

- Acid Sulfate Soils
- Monitoring Well
- Site Boundary

NOTES

1. AERIAL PHOTOGRAPHY SUPPLIED BY NEARMAP LTD, DATED OCTOBER 2014
2. DEVELOPMENT YIELD PLAN LAYOUT SUPPLIED BY BAC AS CAD FILE 'BRIS0012 SK-004[E] DEVELOPMENT YIELD PLAN.PDF.DWG'
3. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P CORP., NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI (THAILAND), MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

0 100 200 300 metres

REFERENCE SCALE: 1:4,500 (AT A3)
PROJECTION: GDA 1994 MGA ZONE 56

CLIENT
BRISBANE AIRPORT CORPORATION

PROJECT
AUTO PRECINCT

TITLE
PROPOSED DEVELOPMENT WITH PREVIOUS AND CURRENT ASS INVESTIGATION LOCATIONS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-11-15
PREPARED	DP
DESIGN	DP
REVIEW	CC
APPROVED	CC

PROJECT No.	CONTROL	Rev.	FIGURE
1538021	012	B	1

Path: R:\01 Clients\BAC\1538021\Programs\ArcGIS\012\1538021-012-Rev\B-F001-Auto Mall Stage 1 ASS Report.mxd
© THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN. THE SHEET SIZE HAS BEEN MODIFIED FROM:
25mm
0

APPENDIX A

Borehole Logs

REPORT OF BOREHOLE: AM-BH10/MW10

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509477.0 m E 6969430.4 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 3.14 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
PT	L	25/10/16	-1.0									650 mm stick up PVC; 50 mm dia. PVC
			-0.5									
			-0.0	3.14	ASS 0.00-0.25 m R = 0A PID = 0.8 ppm			SM	TOPSOIL: Silty SAND fine to medium grained, brown, with some fine to medium, sub-angular gravel	D - M		
				0.15 / 2.99				CH	CLAY high plasticity, dark grey			Concrete
			0.5		ASS 0.25-0.50 m R = 0B; J 0.25-0.50 m R = 0B; ASS 0.50-0.75 m R = 0B PID = 0.6 ppm; ASS 0.75-1.00 m R = 0B; J 0.75-1.00 m R = 0B							Bentonite seal
			1.0	1.10 / 2.04	ASS 1.00-1.25 m R = 0B PID = 0.8 ppm				trace rootlets from 1.1 m to 1.15 m			
			1.5		ASS 1.25-1.50 m R = 0B; ASS 1.50-1.75 m R = 0B PID = 1.3 ppm					M - W		Filter sand
			2.0		ASS 1.75-2.00 m R = 0B; J 1.75-2.00 m R = 0B; ASS 2.00-2.25 m R = 0B PID = 1.8 ppm; ASS 2.25-2.50 m R = 0B							0.4 mm aperture slots
			2.5		ASS 2.50-2.75 m R = 0B PID = 1.8 ppm; ASS 2.75-3.00 m R = 0B; J 2.75-3.00 m R = 0B							
			-3.0	0.14					END OF BOREHOLE @ 3.00 m TARGET DEPTH STANDPIPE INSTALLED			End cap
			3.5									
			4.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

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REPORT OF BOREHOLE: AM-BH13

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509616.0 m E 6968587.8 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 4.22 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	06/10/16	0.0	4.22	ASS 0.00-0.25 m R = 0A PID = 4.5 ppm			SM	Silty SAND fine to medium grained, brown, trace rootlets	D		TOPSOIL
				0.20 4.02	ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			CI	Sandy CLAY medium plasticity, red brown, fine to medium sand			FILL
			0.5	0.50 3.72	ASS 0.50-0.75 m R = 0A PID = 4.4 ppm				some fine to medium, sub-angular gravel from 0.5 m to 0.75 m	D - M		
				0.75 3.47	ASS 0.75-1.00 m R = 0A J 0.75-1.00 m R = 0A			GW	Sandy Clayey GRAVEL fine to medium grained, to 20 mm, sub-angular, pale brown, fine to coarse sand			
			1.0	1.00 3.22	ASS 1.00-1.25 m R = 0A PID = 5.5 ppm			GW	Clayey Sandy GRAVEL fine to medium grained, to 15 mm, sub-angular, red brown, fine to coarse sand	D		
				1.25 2.97	ASS 1.25-1.50 m R = 0A				change to dark grey			
			1.5		ASS 1.50-1.75 m R = 0B PID = 4.7 ppm							
				1.65 2.57	ASS 1.75-2.00 m R = 0B J 1.75-2.00 m R = 0B			CH	Silty CLAY high plasticity, dark grey black			NATURAL
			2.0		ASS 2.00-2.25 m R = 0B PID = 3.3 ppm					M		
				2.35 1.87	ASS 2.25-2.50 m R = 0B			SC	Clayey SAND fine to medium grained, dark grey, medium to high plasticity clay			
			2.5		ASS 2.50-2.75 m R = 0B PID = 3.4 ppm					M - W		
					ASS 2.75-3.00 m R = 0B J 2.75-3.00 m R = 0B					W		
			3.0	1.22					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH14/MW14

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509585.9 m E 6968479.0 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 4.08 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 2.80 m	CHECKED: KRB DATE: 22/11/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
PT	L	25/10/16	-1.0									650 mm stick up PVC; 50 mm dia. PVC
			-0.5									
			-0.0	4.08	ASS 0.00-0.25 m R = 0A PID = 0.6 ppm			SM	TOPSOIL: Silty SAND fine to medium grained, brown, trace rootlets			Concrete
				0.20								
				3.88	ASS 0.25-0.50 m R = 0A			GP	FILL: Clayey GRAVEL fine to medium grained, to 12 mm, sub-angular to angular, grey, medium to high plasticity clay, with some fine to medium grain sand			
				0.35								
				3.73	J 0.25-0.50 m R = 0A			CH	FILL: CLAY high plasticity, brown, with some fine to medium grain sand			Bentonite seal
			0.5	0.55	ASS 0.50-0.75 m R = 0A PID = 0.7 ppm							
				3.53				GM	FILL: Sandy Silty GRAVEL fine to medium grained, to 15 mm, angular, grey, fine to coarse sand	D		
					ASS 0.75-1.00 m R = 0A J 0.75-1.00 m R = 0A							
			1.0		ASS 1.00-1.25 m R = 1A							
				1.10								
				2.98	PID = 0.7 ppm			CL-CI	Sandy CLAY low to medium plasticity, grey mottled yellow, fine to medium sand, with some fine, sub-angular grain gravel			
				1.20								
				2.88				CH				
				1.30	ASS 1.25-1.50 m R = 0A							
				2.78				CI-CH	CLAY high plasticity, red brown, trace fine, sub-angular grain gravel			
				1.45								
			1.5	2.63				CH	Silty CLAY medium to high plasticity, dark grey brown			
					ASS 1.50-1.75 m R = 1A PID = 0.6 ppm				CLAY high plasticity, dark grey mottled yellow	M		Filter sand
					ASS 1.75-2.00 m R = 1A J 1.75-2.00 m R = 1A							
			2.0		ASS 2.00-2.25 m R = 1A							0.4 mm aperture slots
				2.15	PID = 0.7 ppm							
				1.93				CI	Sandy CLAY medium plasticity, grey mottled orange, fine to medium sand			
					ASS 2.25-2.50 m R = 1A							
				2.45								
			2.5	1.63				SC	Clayey SAND fine to medium grained, brown, medium to high plasticity clay	M - W		
					ASS 2.50-2.75 m R = 0A PID = 1 ppm							
					ASS 2.75-2.80 m R = 0A J 2.75-2.80 m R = 0A							
				1.28					END OF BOREHOLE @ 2.80 m TARGET DEPTH STANDPIPE INSTALLED			End cap
			3.0									
			3.5									
			4.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

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REPORT OF BOREHOLE: AM-BH15/MW15

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509902.6 m E 6968555.4 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 3.14 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 7/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
PT	L	25/10/16	-1.0									650 mm stick up PVC; 50 mm dia. PVC
			-0.5									
			-0.0	3.14	ASS 0.00-0.25 m R = 0A			SM	TOPSOIL: Silty SAND fine to medium grained, dark brown, trace rootlets			Concrete
				0.10 / 3.04	J 0.00-0.10 m R = 0A PID = 6.5 ppm			CI-CH	Silty CLAY medium to high plasticity, dark brown, with some fine to medium sand	D - M		
				0.35	ASS 0.25-0.50 m							Bentonite seal
				0.40 / 2.74	R = 0A J 0.25-0.50 m R = 0A			SM CH	Silty SAND fine to medium grained, pale yellow			
			0.5	0.55 / 2.59	ASS 0.50-0.75 m R = 1B PID = 6.8 ppm			CH	CLAY high plasticity, brown mottled orange, trace fine to coarse sand			
					ASS 0.75-1.00 m R = 0B J 0.75-1.00 m R = 0B				CLAY high plasticity, grey, with some fine to medium sand			
			1.0		ASS 1.00-1.25 m R = 0B PID = 7.8 ppm					M		
					ASS 1.25-1.50 m R = 0B							
			1.5		ASS 1.50-1.75 m R = 0B PID = 9 ppm							
				1.80 / 1.34	ASS 1.75-2.00 m R = 1B J 1.75-2.00 m R = 1B			CI	Sandy CLAY medium plasticity, grey mottled orange, fine to medium sand			Filter sand
			2.0		ASS 2.00-2.25 m R = 1B PID = 7.2 ppm							0.4 mm aperture slots
					ASS 2.25-2.50 m R = 1B					W		
				2.40 / 0.74				SC	Clayey SAND fine to medium grained, dark grey, trace timber up to 10 mm dia			
			2.5		ASS 2.50-2.75 m R = 0B PID = 5.5 ppm							
				2.70 / 0.44	ASS 2.75-3.00 m R = 0B J 2.75-3.00 m R = 0B			CI-CH	CLAY medium to high plasticity, dark grey, with some fine to medium sand	M - W		
			-3.0	0.14					END OF BOREHOLE @ 3.00 m TARGET DEPTH STANDPIPE INSTALLED			End cap
			3.5									
			4.0									

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GAP gINT FN. F01d RL3

GAP 8_10.0 LIB.GLB Log GAP NON-CORED FULL PAGE 1538021 - BAC AUTOPRECINCT.GPJ <<DrawingFile>> 22/11/2016 16:11 8.30.004 Datgel Tools

REPORT OF BOREHOLE: AM-BH16/MW16

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510075.2 m E 6968683.3 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.42 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 7/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
PT	L	25/10/16	-1.0									650 mm stick up PVC; 50 mm dia. PVC
			-0.5									
			0.0	2.42	ASS 0.00-0.25 m R = 0A PID = 3.5 ppm			CI-CH	Silty CLAY medium to high plasticity, dark brown, with some fine to medium grain sand, trace rootlets	D		Concrete
				0.15 / 2.27				CH	CLAY high plasticity, grey mottled orange			Bentonite seal
			0.5		ASS 0.25-0.50 m R = 1B; J 0.25-0.50 m R = 1B; ASS 0.50-0.75 m R = 1B PID = 2.9 ppm; ASS 0.75-1.00 m R = 1B; J 0.75-1.00 m R = 1B					M		
			1.0		ASS 1.00-1.25 m R = 1B PID = 2.3 ppm							
				1.30 / 1.12	ASS 1.25-1.50 m R = 1B				with some fine to medium sand from 1.3 m to 2.1 m			
			1.5		ASS 1.50-1.75 m R = 1B PID = 3.4 ppm; ASS 1.75-2.00 m R = 1B; J 1.75-2.00 m R = 1B					M - W		Filter sand
			2.0	2.10 / 0.32	ASS 2.00-2.25 m R = 1B PID = 3.4 ppm; ASS 2.25-2.50 m R = 0B			SC	Clayey SAND fine to medium grained, dark grey mottled green			0.4 mm aperture slots
			2.5	2.60 / -0.18	ASS 2.50-2.75 m R = 0B PID = 2.5 ppm			CI	Sandy CLAY medium plasticity, dark grey, fine to medium sand	W		
				2.85 / -0.43	ASS 2.75-3.00 m R = 0B; J 2.75-3.00 m R = 0B			SC	Clayey SAND fine to medium grained, dark grey			
			3.0	-0.58					END OF BOREHOLE @ 3.00 m TARGET DEPTH STANDPIPE INSTALLED			End cap
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH18

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509880.4 m E 6968707.0 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.75 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	06/10/16	0.0	2.75	ASS 0.00-0.25 m R = 0A PID = 2.1 ppm ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			GP	Silty Sandy GRAVEL fine to medium grained, to 15 mm, angular, grey, fine to medium sand, trace rootlets	D		FILL
			0.5	0.40 2.35	ASS 0.50-0.75 m R = 0A PID = 2.6 ppm ASS 0.75-1.00 m R = 0B J 0.75-1.00 m R = 0B ASS 1.00-1.25 m R = 0B PID = 2.3 ppm ASS 1.25-1.50 m R = 0B ASS 1.50-1.75 m R = 0B PID = 2.3 ppm ASS 1.75-2.00 m R = 0B J 1.75-2.00 m R = 1B ASS 2.00-2.25 m R = 1B PID = 2.1 ppm ASS 2.25-2.50 m R = 1B ASS 2.50-2.75 m R = 1B PID = 1.7 ppm ASS 2.75-3.00 m R = 0B J 2.75-3.00 m R = 0B			CI	Sandy CLAY medium plasticity, brown, fine to medium sand	M		NATURAL
			1.0	0.80 1.95				CH	CLAY high plasticity, grey			
			1.5	1.10 1.65				CI	Sandy CLAY medium to high plasticity, grey mottled orange, fine sand	M - W		
			2.0	2.05 0.70				SC	Clayey SAND fine to medium grained, grey mottled orange, medium to high plasticity clay	W		
			2.5	2.90 -0.15				CL-CI	Sandy CLAY low to medium plasticity, dark grey, fine to medium sand			
			3.0	-0.25					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH24

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509682.3 m E 6968611.5 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 4.19 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	06/10/16	0.0	4.19	ASS 0.00-0.25 m R = 0A			SM	Silty SAND fine to medium grained, brown, trace rootlets	D		TOPSOIL
				0.15 / 4.04	ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			GW	Silty Sandy GRAVEL fine to medium grained, to 15 mm, angular, grey, fine to coarse sand	D - M		FILL
			0.5	0.40 / 3.79	ASS 0.50-0.75 m R = 0A			GC	Clayey GRAVEL fine to medium grained, to 10 mm, sub-angular, red grey, medium to high plasticity clay, with some fine to medium grain sand			
				0.80 / 3.39	ASS 0.75-1.00 m R = 0A J 0.75-1.00 m R = 0A			CI-CH	CLAY medium to high plasticity, dark grey mottled green, with some fine to medium grain, rounded gravel	M		NATURAL
			1.0		ASS 1.00-1.25 m R = 0A J 1.10-1.20 m R = 1A							
				1.30 / 2.89	ASS 1.25-1.50 m R = 0A			ML-MH	Clayey Sandy SILT low to medium liquid limit, pale red mottled white, fine to medium sand, with some medium grain, sub-angular to angular gravel			
			1.5	1.45 / 2.74	ASS 1.50-1.75 m R = 0A			CH	CLAY medium to high plasticity, dark grey, with some fine to medium grain sand			
					ASS 1.75-2.00 m R = 1B J 1.75-2.00 m R = 1B							
			2.0	2.05 / 2.14	ASS 2.00-2.25 m R = 0B				with some fine to medium grain sand from 2.05 m to 2.35 m			
				2.35 / 1.84	ASS 2.25-2.50 m R = 1B			SC	Clayey SAND fine to medium grained, brown grey, medium to high plasticity clay	M - W		
			2.5		ASS 2.50-2.75 m R = 1B							
					ASS 2.75-3.00 m R = 1B J 2.75-3.00 m R = 1B							
			3.0	1.19					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH25

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509624.7 m E 6968635.0 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 3.79 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0	3.79	ASS 0.00-0.25 m R = 0A PID = 5.9 ppm			SM	Silty SAND fine to medium grained, brown, trace rootlets	D		TOPSOIL
				0.15 3.64 0.25				SM	Silty Gravelly SAND fine to medium grained, brown, fine to medium, sub-angular gravel			FILL
				3.54	ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A ASS 0.50-0.75 m R = 0A J 0.50-0.60 m R = 1A			CI-CH	Silty CLAY medium to high plasticity, dark grey black, with some fine to coarse grain sand, trace rootlets	D - M		NATURAL
			0.5	0.70 3.09					NO SAMPLE RECOVERED			
			1.0									
PT	L		1.5	1.50 2.29	ASS 1.50-1.75 m R = 0B PID = 8 ppm ASS 1.75-2.00 m R = 1B J 1.75-2.00 m R = 1B ASS 2.00-2.25 m R = 0B PID = 5.8 ppm			CH	CLAY high plasticity, dark grey mottled green, with some fine to coarse grain sand	M		
			2.0	2.15 1.64	ASS 2.25-2.50 m R = 0A ASS 2.50-2.75 m R = 0A PID = 4.4 ppm			CL-CI	Sandy CLAY low to medium plasticity, grey mottled orange, fine to medium sand	M - W		
		06/10/16	2.5	2.70 1.09	ASS 2.75-3.00 m R = 0A J 2.75-3.00 m R = 0A			SC	Clayey SAND fine to medium grained, brown grey	W		
			3.0	0.79					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH26

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509604.2 m E 6968536.0 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 4.03 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	06/10/16	0.0	4.03	ASS 0.00-0.25 m R = 0A PID = 3.6 ppm			SM	Silty SAND fine to medium grained, brown, trace rootlets			TOPSOIL
				0.30 3.73	ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			GM	Silty Sandy GRAVEL fine to medium grained, to 15 mm, angular, grey, fine to coarse sand	D		FILL
			0.5	0.60 3.43 0.70 3.33 0.80	ASS 0.50-0.75 m R = 0A PID = 4.4 ppm ASS 0.75-1.00 m			GP GW	GRAVEL fine to medium grained, to 12 mm, angular, grey, with some fine to coarse grain sand			
				3.23	R = 0A J 0.75-1.00 m R = 0A			CI	Silty Sandy GRAVEL fine to medium grained, to 10 mm, angular, grey, fine to coarse sand			
			1.0	1.05 1.10 2.93	ASS 1.00-1.25 m R = 0A PID = 4.7 ppm			GP CI-CH	Sandy CLAY medium plasticity, grey brown, fine to coarse sand, with some fine grain, sub-angular gravel	D - M		NATURAL
				1.30 2.73	ASS 1.25-1.50 m R = 0A			CH	GRAVEL fine to medium grained, to 20 mm, angular, grey, with some fine to coarse grain sand			
			1.5		ASS 1.50-1.75 m R = 0B PID = 4.8 ppm				Silty CLAY medium to high plasticity, grey brown, with some fine to coarse grain sand CLAY high plasticity, dark brown			
				1.75 2.28	ASS 1.75-2.00 m R = 1B J 1.75-2.00 m R = 1B				mottled black from 1.75 m to 2.0 m	M		
			2.0		ASS 2.00-2.25 m R = 0B PID = 4.3 ppm							
				2.30 1.73	ASS 2.25-2.50 m R = 0A			SC	Clayey SAND fine to medium grained, brown grey			
			2.5		ASS 2.50-2.75 m R = 0A PID = 3.7 ppm					M - W		
					ASS 2.75-3.00 m R = 0A J 2.75-3.00 m R = 0A					W		
			3.0	1.03					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH29

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SHEET: 1 OF 1

CLIENT: Brisbane Airport Corporation
PROJECT: BAC Auto Mall Precinct
LOCATION: Brisbane Airport
JOB NO: 1538021

COORDS: 510018.4 m E 6968636.0 m N MGA94 56
SURFACE RL: 2.95 m DATUM: AD
INCLINATION: -90°
HOLE DIA: 100 mm HOLE DEPTH: 3.00 m

DRILL RIG: Geoprobe 7822
CONTRACTOR: Numac
LOGGED: MJM DATE: 7/10/16
CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	07/10/16	0.0	0.05 2.90	ASS 0.00-0.25 m R = 0A J 0.00-0.10 m R = 0A PID = 9 ppm			SM CI-CH	Silty SAND fine to medium grained, dark brown, trace rootlets Silty CLAY medium to high plasticity, dark brown, with some fine to medium grain sand, trace rootlets mottled orange from 0.3 m to 1.0 m	D D - M		TOPSOIL FILL
				0.30 2.65	ASS 0.25-0.50 m R = 1A J 0.25-0.50 m R = 1A ASS 0.50-0.75 m R = 1A PID = 9.1 ppm ASS 0.75-1.00 m R = 1B J 0.75-1.00 m R = 1B							
			0.5									
			1.0	1.00 1.95	ASS 1.00-1.25 m R = 1B PID = 9.2 ppm ASS 1.25-1.50 m R = 1B			CI	Sandy CLAY medium plasticity, dark grey mottled orange, fine to medium sand	M		NATURAL
			1.5	1.50 1.45	ASS 1.50-1.75 m R = 1B PID = 9.2 ppm ASS 1.75-2.00 m R = 1B J 1.75-2.00 m R = 1B			SC	Clayey SAND fine to medium grained, dark grey mottled orange	W		
			2.0		ASS 2.00-2.25 m R = 1B PID = 9.5 ppm ASS 2.25-2.50 m R = 1B							
			2.5		ASS 2.50-2.75 m R = 1B PID = 4 ppm ASS 2.75-3.00 m R = 0B J 2.75-3.00 m R = 0B							
				2.85 0.10				CI	Sandy CLAY medium plasticity, dark grey, fine to medium sand			
			3.0	-0.05					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01a RL3

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REPORT OF BOREHOLE: AM-BH30

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510351.3 m E 6969177.0 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.74 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 10/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	10/10/16	0.0	2.74	ASS 0.00-0.25 m R = 0A PID = 3.2 ppm			ML-MH	Clayey Sandy SILT medium liquid limit, brown, fine to medium sand, trace rootelts	D - M		NATURAL
				0.20 2.54	ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			CI-CH	Silty CLAY medium to high plasticity, grey brown, with some fine to medium grain sand, trace rootlets			
			0.5	0.40 2.34	ASS 0.50-0.75 m R = 0A PID = 3.9 ppm ASS 0.75-1.00 m R = 0A			CH	Silty CLAY high plasticity, dark grey			
			1.0	0.85 1.89	J 0.75-1.00 m R = 0A ASS 1.00-1.25 m R = 0A PID = 4.2 ppm			CH	Silty CLAY high plasticity, brown grey, with some fine to medium grain sand			
				1.15 1.59	ASS 1.25-1.50 m R = 0A				trace fine to medium sand from 1.15 m to 1.35 m			
			1.5	1.40 1.34	ASS 1.50-1.75 m R = 0A PID = 4 ppm ASS 1.75-2.00 m R = 0A J 1.75-2.00 m R = 0A				colour change to dark grey	M		
			2.0		ASS 2.00-2.25 m R = 0A PID = 3.4 ppm ASS 2.25-2.50 m R = 0A							
			2.5		ASS 2.50-2.75 m R = 0A PID = 4.4 ppm J 2.75-3.00 m R = 0A							
			3.0	-0.26					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH31/MW31

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510224.5 m E 6969041.3 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.75 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 10/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
			-1.0									650 mm stick up PVC; 50 mm dia. PVC
			-0.5									
PT	L	25/10/16	-0.0	2.75	ASS 0.00-0.25 m R = 1A			ML-MH	Clayey Sandy SILT medium liquid limit, brown, fine to medium sand, trace rootlets	D - M		Concrete
				0.10 / 2.65	PID = 2.8 ppm			CH	Silty CLAY medium to high plasticity, brown mottled orange, with some fine to medium grain sand			Bentonite seal
					ASS 0.25-0.50 m R = 1A; J 0.25-0.50 m R = 1A							
			0.5	0.50 / 2.25	ASS 0.50-0.75 m R = 0A PID = 3.3 ppm			CH	CLAY high plasticity, dark grey	M		
					ASS 0.75-1.00 m R = 0A; J 0.75-1.00 m R = 0A							
			1.0	0.95 / 1.00				CI	Sandy CLAY dark grey, fine to medium sand			
				1.75 / 1.10 / 1.65	ASS 1.00-1.25 m R = 0A PID = 3.6 ppm			SC				
								CH	Clayey SAND fine to medium grained, grey; CLAY high plasticity, dark grey			
					ASS 1.25-1.50 m R = 0A							
			1.5		ASS 1.50-1.75 m R = 0A PID = 3.3 ppm							Filter sand
					ASS 1.75-2.00 m R = 0A; J 1.75-2.00 m R = 0A							
			2.0		ASS 2.00-2.25 m R = 0A PID = 3.1 ppm							0.4 mm aperture slots
				2.35 / 0.40 / 2.45	ASS 2.25-2.50 m R = 0A				increasing fine to medium sand content			
			2.5	2.55 / 0.20 / 2.65 / 0.10	ASS 2.50-2.75 m R = 0A PID = 2.6 ppm			CI	Sandy CLAY medium plasticity, dark grey, fine to medium sand	W		
								SC	Clayey SAND fine to medium grained, dark grey			
					ASS 2.75-3.00 m R = 0A; J 2.75-3.00 m R = 0A			SM	Silty SAND fine to medium grained, dark grey, with some low to medium plasticity clay			
			3.0	-0.25					END OF BOREHOLE @ 3.00 m TARGET DEPTH STANDPIPE INSTALLED			End cap
			3.5									
			4.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP 8_10.0 LIB.GLB Log GAP NON-CORED FULL PAGE 1538021 - BAC AUTOPRECINCT.GPJ <<DrawingFile>> 22/11/2016 16:12 8.30.004 Datgel Tools

REPORT OF BOREHOLE: AM-BH32

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510120.5 m E 6969060.4 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.64 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 10/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	10/10/16	0.0	2.64	ASS 0.00-0.25 m R = 0A PID = 2.6 ppm ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			ML-MH	Clayey Sandy SILT medium liquid limit, brown, fine to medium sand, trace rootlets	D - M		NATURAL
			0.5	0.50 2.14	ASS 0.50-0.75 m R = 0A PID = 2.3 ppm ASS 0.75-1.00 m R = 0A J 0.75-1.00 m R = 0A ASS 1.00-1.25 m R = 0A PID = 2.3 ppm			CH	CLAY high plasticity, dark grey	M		
			1.0	1.25 1.39 1.35 1.29	ASS 1.25-1.50 m R = 0A			CI CH	Sandy CLAY medium plasticity, dark grey, fine to medium sand, trace rootlets Silty CLAY high plasticity, dark grey			
			1.5	1.80 0.84	ASS 1.50-1.75 m R = 0A PID = 2.9 ppm ASS 1.75-2.00 m R = 0A J 1.75-2.00 m R = 0A ASS 2.00-2.25 m R = 0A PID = 2.7 ppm ASS 2.25-2.50 m R = 0A				trace rootlets from 1.8 m to 2.0 m	M - W		
			2.0									
			2.5	2.70 -0.06 2.80 2.85 -0.21	ASS 2.50-2.75 m R = 0A PID = 2.6 ppm ASS 2.75-3.00 m R = 0A J 2.75-3.00 m R = 0A			CI SC	Sandy CLAY medium plasticity, dark grey, fine to medium sand increasing sand content, fine to medium grain Clayey SAND fine to medium grained, grey, trace rootlets	W		
			3.0	-0.36					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

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APPENDIX B

Laboratory Documents

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre:	scurti@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
1	AM-BH26	0	0.25	soil	6/10/2016		bag		1	N		X	X						
2	AM-BH26	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X			
3	AM-BH26	0.5	0.75	soil	6/10/2016		bag		1	N		X	X						
4	AM-BH26	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X						
5	AM-BH26	1	1.25	soil	6/10/2016		bag		1	N		X	X						
6	AM-BH26	1.25	1.5	soil	6/10/2016		bag		1	N		X	X						
7	AM-BH26	1.5	1.75	soil	6/10/2016		bag		1	N		X	X						
8	AM-BH26	1.75	2	soil	6/10/2016		bag+2 jars		3	N		X	X						
9	AM-BH26	2	2.25	soil	6/10/2016		bag		1	N		X	X						
10	AM-BH26	2.25	2.5	soil	6/10/2016		bag		1	N		X	X						
11	AM-BH26	2.5	2.75	soil	6/10/2016		bag		1	N		X	X						
12	AM-BH26	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			X			
13	AM-BH26	0	0.1	soil	6/10/2016		jar		1	N							X	X	X

Environmental Division
Brisbane
Work Order Reference
EB1624693

Telephone : + 61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Container		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project Number:	1538021	Quote/Order No.:	EN/002/15
Project Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Golder Associates

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400

Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
14	AM-BH18	0	0.25	soil	6/10/2016		bag		1	N		X	X			
15	AM-BH18	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
16	AM-BH18	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
17	AM-BH18	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
18	AM-BH18	1	1.25	soil	6/10/2016		bag		1	N		X	X			
19	AM-BH18	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
20	AM-BH18	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
21	AM-BH18	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			X
22	AM-BH18	2	2.25	soil	6/10/2016		bag		1	N		X	X			
23	AM-BH18	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
24	AM-BH18	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
25	AM-BH18	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analyzing Laboratory

LAB BATCH NUMBER

Security Seal: Chilled: Bill to:

Suitable Containers: Frozen: Address:

Condition: Ambient:

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project Number:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Phone: (07) 3721 5400
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Golder Associates

Invoice to be sent to Accounts: auaccountspayablo@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

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ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
26	AM-BH24	0	0.25	soil	6/10/2016		bag		1	N		X	X			
27	AM-BH24	0.25	0.5	soil	6/10/2016		bag+2jars		3	N		X	X	X	X	X
28	AM-BH24	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
29	AM-BH24	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
30	AM-BH24	1	1.25	soil	6/10/2016		bag		1	N		X	X			
31	AM-BH24	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
32	AM-BH24	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
33	AM-BH24	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
34	AM-BH24	2	2.25	soil	6/10/2016		bag		1	N		X	X			
35	AM-BH24	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
36	AM-BH24	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
37	AM-BH24	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			
38	AM-BH24	1.1	1.2	soil	6/10/2016		jar		1	N	X					

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14/10		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

Security Seal		Chilled	LAB BATCH NUMBER		
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Location:	1538021	Quote/Order No:	EN/002/15
Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Phone: (07) 3721 5400
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Golder Associates
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
39	AM-BH10	0	0.25	soil	6/10/2016		bag	1	N		X	X			
40	AM-BH10	0.25	0.5	soil	6/10/2016		bag+2jar	3	N		X	X	X	X	X
41	AM-BH10	0.5	0.75	soil	6/10/2016		bag	1	N		X	X			
42	AM-BH10	0.75	1	soil	6/10/2016		bag+jar	2	N		X	X			
43	AM-BH10	1	1.25	soil	6/10/2016		bag	1	N		X	X			
44	AM-BH10	1.25	1.5	soil	6/10/2016		bag	1	N		X	X			
45	AM-BH10	1.5	1.75	soil	6/10/2016		bag	1	N		X	X			
46	AM-BH10	1.75	2	soil	6/10/2016		bag+jar	2	N		X	X			X
47	AM-BH10	2	2.25	soil	6/10/2016		bag	1	N		X	X			
48	AM-BH10	2.25	2.5	soil	6/10/2016		bag	1	N		X	X			
49	AM-BH10	2.5	2.75	soil	6/10/2016		bag	1	N		X	X			
50	AM-BH10	2.75	3	soil	6/10/2016		bag+jar	2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14/10		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Sealing Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Job Number:	1538021	Quote/Order No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Comments/Special Instructions:

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ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
51	AM-BH32	0	0.25	soil	10/10/2016		bag		1	N		X	X			
52	AM-BH32	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
53	AM-BH32	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
54	AM-BH32	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			
55	AM-BH32	1	1.25	soil	10/10/2016		bag		1	N		X	X			
56	AM-BH32	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
57	AM-BH32	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
58	AM-BH32	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			
59	AM-BH32	2	2.25	soil	10/10/2016		bag		1	N		X	X			
60	AM-BH32	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
61	AM-BH32	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
62	AM-BH32	2.75	3	soil	10/10/2016		bag+jar		2	N		X	X			X

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

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	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		Chilled	LAB BATCH NUMBER		
Suitable Containers		Frozen	Bill to:		
Cool Box		Ambient	Address		

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
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SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Job Number:	1538021	Quote/Order No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
63 AM-BH29	0	0.25	soil	7/10/2016		bag		1	N		X	X						
64 AM-BH29	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
65 AM-BH29	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
66 AM-BH29	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
67 AM-BH29	1	1.25	soil	7/10/2016		bag		1	N		X	X						
68 AM-BH29	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
69 AM-BH29	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
70 AM-BH29	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X			X			
71 AM-BH29	2	2.25	soil	7/10/2016		bag		1	N		X	X						
72 AM-BH29	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
73 AM-BH29	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
74 AM-BH29	2.75	3	soil	7/10/2016		bag+jar		2	N		X	X						
75 AM-BH29	0	0.1	soil	7/10/2016		jar		1	N							X	X	X

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER		
RECEIVED BY	CHRES	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

TO BE Filled Out By Analytical Laboratory

Security Seal		Chilled		LAB BATCH NUMBER	
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STA[illegible] ON RECEIPT OF SAMPLES.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1624693**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 4
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 14-Oct-2016 4:00 PM	Issue Date	: 17-Oct-2016
Client Requested Due Date	: 21-Oct-2016	Scheduled Reporting Date	: **21-Oct-2016**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 0.1°C, 0.4°C, 1.2°C
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 74 / 73

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please be advised that sample "AM-BH26 0-0.1" was not received at the laboratory (denoted SNR on the scanned COC).**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH
EB1624693-001	[06-Oct-2016]	AM-BH26 0-0.25		✓					
EB1624693-002	[06-Oct-2016]	AM-BH26 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-003	[06-Oct-2016]	AM-BH26 0.5-0.75		✓					
EB1624693-004	[06-Oct-2016]	AM-BH26 0.75-1		✓					
EB1624693-005	[06-Oct-2016]	AM-BH26 1-1.25		✓					
EB1624693-006	[06-Oct-2016]	AM-BH26 1.25-1.5		✓					
EB1624693-007	[06-Oct-2016]	AM-BH26 1.5-1.75		✓					
EB1624693-008	[06-Oct-2016]	AM-BH26 1.75-2		✓					
EB1624693-009	[06-Oct-2016]	AM-BH26 2-2.25		✓					
EB1624693-010	[06-Oct-2016]	AM-BH26 2.25-2.5		✓					
EB1624693-011	[06-Oct-2016]	AM-BH26 2.5-2.75		✓					
EB1624693-012	[06-Oct-2016]	AM-BH26 2.75-3		✓	✓		✓		
EB1624693-014	[06-Oct-2016]	AM-BH18 0-0.25		✓					
EB1624693-015	[06-Oct-2016]	AM-BH18 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-016	[06-Oct-2016]	AM-BH18 0.5-0.75		✓					
EB1624693-017	[06-Oct-2016]	AM-BH18 0.75-1		✓					
EB1624693-018	[06-Oct-2016]	AM-BH18 1-1.25		✓					
EB1624693-019	[06-Oct-2016]	AM-BH18 1.25-1.5		✓					
EB1624693-020	[06-Oct-2016]	AM-BH18 1.5-1.75		✓					
EB1624693-021	[06-Oct-2016]	AM-BH18 1.75-2		✓	✓		✓		
EB1624693-022	[06-Oct-2016]	AM-BH18 2-2.25		✓					
EB1624693-023	[06-Oct-2016]	AM-BH18 2.25-2.5		✓					
EB1624693-024	[06-Oct-2016]	AM-BH18 2.5-2.75		✓					
EB1624693-025	[06-Oct-2016]	AM-BH18 2.75-3		✓					
EB1624693-026	[06-Oct-2016]	AM-BH24 0-0.25		✓					
EB1624693-027	[06-Oct-2016]	AM-BH24 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-028	[06-Oct-2016]	AM-BH24 0.5-0.75		✓					
EB1624693-029	[06-Oct-2016]	AM-BH24 0.75-1		✓					
EB1624693-030	[06-Oct-2016]	AM-BH24 1-1.25		✓					
EB1624693-031	[06-Oct-2016]	AM-BH24 1.25-1.5		✓					
EB1624693-032	[06-Oct-2016]	AM-BH24 1.5-1.75		✓					
EB1624693-033	[06-Oct-2016]	AM-BH24 1.75-2		✓					
EB1624693-034	[06-Oct-2016]	AM-BH24 2-2.25		✓					
EB1624693-035	[06-Oct-2016]	AM-BH24 2.25-2.5		✓					
EB1624693-036	[06-Oct-2016]	AM-BH24 2.5-2.75		✓					

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH
EB1624693-037	[06-Oct-2016]	AM-BH24 2.75-3		✓	✓		✓		
EB1624693-038	[06-Oct-2016]	AM-BH24 1.1-1.2	✓						
EB1624693-039	[06-Oct-2016]	AM-BH10 0-0.25		✓					
EB1624693-040	[06-Oct-2016]	AM-BH10 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-041	[06-Oct-2016]	AM-BH10 0.5-0.75		✓					
EB1624693-042	[06-Oct-2016]	AM-BH10 0.75-1		✓					
EB1624693-043	[06-Oct-2016]	AM-BH10 1-1.25		✓					
EB1624693-044	[06-Oct-2016]	AM-BH10 1.25-1.5		✓					
EB1624693-045	[06-Oct-2016]	AM-BH10 1.5-1.75		✓					
EB1624693-046	[06-Oct-2016]	AM-BH10 1.75-2		✓	✓		✓		
EB1624693-047	[06-Oct-2016]	AM-BH10 2-2.25		✓					
EB1624693-048	[06-Oct-2016]	AM-BH10 2.25-2.5		✓					
EB1624693-049	[06-Oct-2016]	AM-BH10 2.5-2.75		✓					
EB1624693-050	[06-Oct-2016]	AM-BH10 2.75-3		✓					
EB1624693-051	[10-Oct-2016]	AM-BH32 0-0.25		✓					
EB1624693-052	[10-Oct-2016]	AM-BH32 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-053	[10-Oct-2016]	AM-BH32 0.5-0.75		✓					
EB1624693-054	[10-Oct-2016]	AM-BH32 0.75-1		✓					
EB1624693-055	[10-Oct-2016]	AM-BH32 1-1.25		✓					
EB1624693-056	[10-Oct-2016]	AM-BH32 1.25-1.5		✓					
EB1624693-057	[10-Oct-2016]	AM-BH32 1.5-1.75		✓					
EB1624693-058	[10-Oct-2016]	AM-BH32 1.75-2		✓					
EB1624693-059	[10-Oct-2016]	AM-BH32 2-2.25		✓					
EB1624693-060	[10-Oct-2016]	AM-BH32 2.25-2.5		✓					
EB1624693-061	[10-Oct-2016]	AM-BH32 2.5-2.75		✓					
EB1624693-062	[10-Oct-2016]	AM-BH32 2.75-3		✓	✓		✓		
EB1624693-063	[07-Oct-2016]	AM-BH29 0-0.25		✓					
EB1624693-064	[07-Oct-2016]	AM-BH29 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-065	[07-Oct-2016]	AM-BH29 0.5-0.75		✓					
EB1624693-066	[07-Oct-2016]	AM-BH29 0.75-1		✓					
EB1624693-067	[07-Oct-2016]	AM-BH29 1-1.25		✓					
EB1624693-068	[07-Oct-2016]	AM-BH29 1.25-1.5		✓					
EB1624693-069	[07-Oct-2016]	AM-BH29 1.5-1.75		✓					
EB1624693-070	[07-Oct-2016]	AM-BH29 1.75-2		✓	✓		✓		
EB1624693-071	[07-Oct-2016]	AM-BH29 2-2.25		✓					
EB1624693-072	[07-Oct-2016]	AM-BH29 2.25-2.5		✓					
EB1624693-073	[07-Oct-2016]	AM-BH29 2.5-2.75		✓					
EB1624693-074	[07-Oct-2016]	AM-BH29 2.75-3		✓					
EB1624693-075	[07-Oct-2016]	AM-BH29 0-0.1			✓			✓	

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG020R-T Total Metals by ICPMS - Suite R
EB1624693-075	[07-Oct-2016]	AM-BH29 0-0.1	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au

SERENA CURTI

- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1624693**	Page	: 1 of 78
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016 16:00
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 21-Oct-2016 17:01
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 74		
No. of samples analysed	: 73		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005T (Total Metals): Sample EB1624693-002 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.1	8.2	7.8	7.5	7.3
ø pH (Fox)	----	0.1	pH Unit	4.8	6.3	5.8	5.5	5.4
ø Reaction Rate	----	1	-	2	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	4.7	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	211	----	----	----
Copper	7440-50-8	5	mg/kg	----	70	----	----	----
Lead	7439-92-1	5	mg/kg	----	<5	----	----	----
Nickel	7440-02-0	2	mg/kg	----	82	----	----	----
Zinc	7440-66-6	5	mg/kg	----	32	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	101	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	84.9	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	108	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	107	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	104	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	114	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	121	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	123	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	111	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	111	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	124	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	99.8	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	6.8	7.8	5.0	6.5
ø pH (Fox)	----	0.1	pH Unit	5.4	4.2	2.9	3.0	4.8
ø Reaction Rate	----	1	-	3	3	3	3	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.6	7.0	4.7	4.3
ø pH (Fox)	----	0.1	pH Unit	5.3	5.8	3.6	2.9	2.8
ø Reaction Rate	----	1	-	2	2	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.2	----	24.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	14	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	65	----
Copper	7440-50-8	5	mg/kg	----	----	----	15	----
Lead	7439-92-1	5	mg/kg	----	----	----	10	----
Nickel	7440-02-0	2	mg/kg	----	----	----	18	----
Zinc	7440-66-6	5	mg/kg	----	----	----	61	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	108	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	97.3	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	105	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	108	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	104	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	114	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	116	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	121	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	81.8	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	94.5	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	117	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	99.1	----	93.4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.3	4.1	4.0	4.2	4.3
ø pH (Fox)	----	0.1	pH Unit	2.7	2.6	2.3	2.6	2.7
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	27.7
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	92.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.5	4.8	4.7	5.2	7.0
ø pH (Fox)	----	0.1	pH Unit	2.7	3.0	2.9	3.2	4.4
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	9.1	8.0	7.6	7.6	6.8
ø pH (Fox)	----	0.1	pH Unit	9.0	7.1	3.4	5.4	2.7
ø Reaction Rate	----	1	-	4	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	5.7	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	214	----	----	----	----
Copper	7440-50-8	5	mg/kg	80	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Nickel	7440-02-0	2	mg/kg	82	----	----	----	----
Zinc	7440-66-6	5	mg/kg	38	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**100**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**92.7**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**101**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**103**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**98.9**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**109**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**110**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**117**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**110**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**106**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**120**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**89.7**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.6	5.0	5.4	5.2	5.8
ø pH (Fox)	----	0.1	pH Unit	2.9	3.0	2.7	3.0	3.5
ø Reaction Rate	----	1	-	3	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	8.0	7.2	7.8	7.7
ø pH (Fox)	----	0.1	pH Unit	5.1	4.1	1.7	2.9	2.7
ø Reaction Rate	----	1	-	3	3	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	24.5	----	43.4	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	33	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	----	----	49	----	----
Copper	7440-50-8	5	mg/kg	----	----	31	----	----
Lead	7439-92-1	5	mg/kg	----	----	60	----	----
Nickel	7440-02-0	2	mg/kg	----	----	33	----	----
Zinc	7440-66-6	5	mg/kg	----	----	242	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	108	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	96.8	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	84.2	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	86.2	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	84.8	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	92.1	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	92.6	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	98.2	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	107	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	108	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	124	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	99.5	----	86.4	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.8	7.8	7.5	7.6	7.6
ø pH (Fox)	----	0.1	pH Unit	2.8	1.7	1.7	1.8	1.6
ø Reaction Rate	----	1	-	3	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	43.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	105	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.7	7.4	7.6	4.4	4.7
ø pH (Fox)	----	0.1	pH Unit	1.6	1.4	1.8	2.6	2.8
ø Reaction Rate	----	1	-	4	4	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	15.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	14
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	<1
Chromium	7440-47-3	2	mg/kg	----	----	----	----	65
Copper	7440-50-8	5	mg/kg	----	----	----	----	18
Lead	7439-92-1	5	mg/kg	----	----	----	----	12
Nickel	7440-02-0	2	mg/kg	----	----	----	----	16
Zinc	7440-66-6	5	mg/kg	----	----	----	----	44
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	<0.05
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	110
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	99.2
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	107
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	110
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	111
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	117
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	119
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	125
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	101
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	100
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	119
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	89.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.6	4.9	5.2	5.0	5.9
ø pH (Fox)	----	0.1	pH Unit	2.6	2.2	1.4	1.6	1.6
ø Reaction Rate	----	1	-	3	3	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.6	6.6	6.8	7.1	7.1
ø pH (Fox)	----	0.1	pH Unit	1.5	1.6	1.6	1.8	1.9
ø Reaction Rate	----	1	-	4	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	27.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	**0.0002**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	**0.0002**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	**0.0002**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	**0.0002**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	**100**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.2	7.9	5.9	4.5	4.1
ø pH (Fox)	----	0.1	pH Unit	6.2	5.3	3.7	2.8	2.4
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	17.8	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	8	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	51	----	----	----
Copper	7440-50-8	5	mg/kg	----	19	----	----	----
Lead	7439-92-1	5	mg/kg	----	9	----	----	----
Nickel	7440-02-0	2	mg/kg	----	38	----	----	----
Zinc	7440-66-6	5	mg/kg	----	47	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	103	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	87.0	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	106	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	104	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	105	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	114	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	117	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	121	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	106	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	104	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	122	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	92.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.3	5.9	6.2	6.4	6.6
ø pH (Fox)	----	0.1	pH Unit	2.6	3.5	3.6	3.8	3.7
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	25.8	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	<0.0002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	<0.0002	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	<0.0002	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	112	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.2	7.5	----	----	----
ø pH (Fox)	----	0.1	pH Unit	2.1	2.4	----	----	----
ø Reaction Rate	----	1	-	3	4	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	15.6	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	7	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	----	----	42	----	----
Copper	7440-50-8	5	mg/kg	----	----	17	----	----
Lead	7439-92-1	5	mg/kg	----	----	9	----	----
Nickel	7440-02-0	2	mg/kg	----	----	27	----	----
Zinc	7440-66-6	5	mg/kg	----	----	41	----	----
Titanium	7440-32-6	10	mg/kg	----	----	250	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	1.8	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	138
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	23	135
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	155
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	157
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1624693**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 21-Oct-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 74		
No. of samples analysed	: 73		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA037: Ass Field Screening Analysis (QC Lot: 620369)									
EB1624693-001	AM-BH26 0-0.25	EA037: pH (F)	----	0.1	pH Unit	7.1	7.2	1.40	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.8	4.9	2.06	0% - 20%
EB1624693-011	AM-BH26 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	7.4	7.3	1.36	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.3	5.3	0.00	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620370)									
EB1624693-022	AM-BH18 2-2.25	EA037: pH (F)	----	0.1	pH Unit	4.5	4.4	2.25	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.7	2.8	3.64	0% - 20%
EB1624693-032	AM-BH24 1.5-1.75	EA037: pH (F)	----	0.1	pH Unit	5.6	5.6	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.9	2.8	3.51	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620371)									
EB1624693-043	AM-BH10 1-1.25	EA037: pH (F)	----	0.1	pH Unit	7.8	7.8	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.8	2.9	3.51	0% - 20%
EB1624693-053	AM-BH32 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	4.6	4.6	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.6	2.5	3.92	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620372)									
EB1624693-063	AM-BH29 0-0.25	EA037: pH (F)	----	0.1	pH Unit	8.2	8.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	6.2	6.0	3.28	0% - 20%
EB1624693-073	AM-BH29 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	7.2	7.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.1	2.0	4.88	0% - 20%
EA055: Moisture Content (QC Lot: 620270)									
EB1624687-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	18.0	17.6	2.31	0% - 50%
EB1624766-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.0	9.8	1.20	No Limit
EA055: Moisture Content (QC Lot: 624690)									
EB1623981-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	4.8	4.6	4.61	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 624690) - continued									
EB1623981-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	25.5	26.2	2.67	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 620694)									
EB1624766-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	9	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	11	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	6	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	13	23.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	33	34	0.00	No Limit
EB1624693-002	AM-BH26 0.25-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	211	# 264	22.2	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	82	99	19.1	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	70	86	21.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	40	21.2	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 620696)									
EB1624693-075	AM-BH29 0-0.1	EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	1.8	2.2	20.8	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 620695)									
EB1624778-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1624693-002	AM-BH26 0.25-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620261)									
EB1624693-002	AM-BH26 0.25-0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620261) - continued									
EB1624693-002	AM-BH26 0.25-0.5	EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 620262)									
EB1624693-002	AM-BH26 0.25-0.5	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 620262)									
EB1624693-002	AM-BH26 0.25-0.5	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620263)									
EB1624693-002	AM-BH26 0.25-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 621845) - continued									
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 621845) - continued									
EB1624693-064	AM-BH29 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620694)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	113	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	103	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	111	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	93.3	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	103	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	102	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	109	87	127
EG020T: Total Metals by ICP-MS (QCLot: 620696)								
EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	<0.5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620695)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	99.7	78	122
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	82.8	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	79.9	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	77.2	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	72.4	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.2	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	94.1	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.5	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.7	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	83.7	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	76.3	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.0	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	70.9	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	91.4	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	55	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261) - continued								
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	104	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620262)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	97.4	47	112
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	106	55	108
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620262)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	93.1	46	115
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	109	53	113
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620263)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	89.5	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	101	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	90.5	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	96.8	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	81.3	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	90.7	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	101	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	99.4	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	90.9	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	98.6	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	84.3	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	82.4	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	69.0	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	65.9	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	73.7	64	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	85.1	66	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620268)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	82.7	66	119
EP080: BTEXN (QCLot: 620268)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	82.6	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	98.7	73	105

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 620268) - continued								
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	97.6	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	102	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	101	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	97.2	72	115
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 621845)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	67.8	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.3	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.8	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.7	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.8	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	64.8	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 621845)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00125 mg/kg	94.7	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.8	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	121	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.6	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.6	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	63.0	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.1	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 621845)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.6	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.4	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.6	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	86.3	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	68.2	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.3	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	107	61	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	102	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	109	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 620694)							
EB1624693-015	AM-BH18 0.25-0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	103	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	110	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	110	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	101	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	108	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	116	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	103	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620695)							
EB1624693-015	AM-BH18 0.25-0.5	EG035T: Mercury	7439-97-6	2.5 mg/kg	93.7	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261)							
EB1624693-015	AM-BH18 0.25-0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	95.1	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	110	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	106	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	102	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	93.1	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	85.2	70	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620262)							
EB1624693-015	AM-BH18 0.25-0.5	EP071SG-S: C10 - C14 Fraction	----	318 mg/kg	97.2	47	130
		EP071SG-S: C15 - C28 Fraction	----	531 mg/kg	104	55	130
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620262)							
EB1624693-015	AM-BH18 0.25-0.5	EP071SG-S: >C10 - C16 Fraction	----	428 mg/kg	91.6	46	130
		EP071SG-S: >C16 - C34 Fraction	----	395 mg/kg	108	53	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620263)							
EB1624693-015	AM-BH18 0.25-0.5	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	103	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	114	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268) - continued							
EB1624693-015	AM-BH18 0.25-0.5	EP080: C6 - C9 Fraction	----	8 mg/kg	91.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620268)							
EB1624693-015	AM-BH18 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	91.8	70	130
EP080: BTEXN (QCLot: 620268)							
EB1624693-015	AM-BH18 0.25-0.5	EP080: Benzene	71-43-2	2 mg/kg	73.0	70	130
		EP080: Toluene	108-88-3	2 mg/kg	77.2	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	52.5	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	62.8	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	74.7	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	75.0	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	90.2	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.00125 mg/kg	82.4	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00125 mg/kg	91.2	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	55.5	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	80.0	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	100.0	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	77.1	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	96.7	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	106	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.8	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	101	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	103	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	75.0	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	95.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	85.6	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	73.3	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.00312 mg/kg	51.5	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	47.2	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	117	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	88.6	30	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	98.8	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	66.0	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	112	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	111	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1624693**	Page	: 1 of 9
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Site	: Brisbane Airport	Issue Date	: 21-Oct-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 74
Order number	: 1538021	No. of samples analysed	: 73

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB1624693--002	AM-BH26 0.25-0.5	**Chromium**	7440-47-3	22.2 %	0% - 20%	**RPD exceeds LOR based limits**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH26 0-0.25,	AM-BH26 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	04-Apr-2017	✓	**18-Oct-2016**	04-Apr-2017	✓
AM-BH26 0.5-0.75,	AM-BH26 0.75-1,							
AM-BH26 1-1.25,	AM-BH26 1.25-1.5,							
AM-BH26 1.5-1.75,	AM-BH26 1.75-2,							
AM-BH26 2-2.25,	AM-BH26 2.25-2.5,							
AM-BH26 2.5-2.75,	AM-BH26 2.75-3,							
AM-BH18 0-0.25,	AM-BH18 0.25-0.5,							
AM-BH18 0.5-0.75,	AM-BH18 0.75-1,							
AM-BH18 1-1.25,	AM-BH18 1.25-1.5,							
AM-BH18 1.5-1.75,	AM-BH18 1.75-2,							
AM-BH18 2-2.25,	AM-BH18 2.25-2.5,							
AM-BH18 2.5-2.75,	AM-BH18 2.75-3,							
AM-BH24 0-0.25,	AM-BH24 0.25-0.5,							
AM-BH24 0.5-0.75,	AM-BH24 0.75-1,							
AM-BH24 1-1.25,	AM-BH24 1.25-1.5,							
AM-BH24 1.5-1.75,	AM-BH24 1.75-2,							
AM-BH24 2-2.25,	AM-BH24 2.25-2.5,							
AM-BH24 2.5-2.75,	AM-BH24 2.75-3,							
AM-BH10 0-0.25,	AM-BH10 0.25-0.5,							
AM-BH10 0.5-0.75,	AM-BH10 0.75-1,							
AM-BH10 1-1.25,	AM-BH10 1.25-1.5,							
AM-BH10 1.5-1.75,	AM-BH10 1.75-2,							
AM-BH10 2-2.25,	AM-BH10 2.25-2.5,							
AM-BH10 2.5-2.75,	AM-BH10 2.75-3							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis - Continued								
Snap Lock Bag - frozen (EA037)								
AM-BH29 0-0.25,	AM-BH29 0.25-0.5,	**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓
AM-BH29 0.5-0.75,	AM-BH29 0.75-1,							
AM-BH29 1-1.25,	AM-BH29 1.25-1.5,							
AM-BH29 1.5-1.75,	AM-BH29 1.75-2,							
AM-BH29 2-2.25,	AM-BH29 2.25-2.5,							
AM-BH29 2.5-2.75,	AM-BH29 2.75-3							
Snap Lock Bag - frozen (EA037)								
AM-BH32 0-0.25,	AM-BH32 0.25-0.5,	**10-Oct-2016**	**18-Oct-2016**	08-Apr-2017	✓	**18-Oct-2016**	08-Apr-2017	✓
AM-BH32 0.5-0.75,	AM-BH32 0.75-1,							
AM-BH32 1-1.25,	AM-BH32 1.25-1.5,							
AM-BH32 1.5-1.75,	AM-BH32 1.75-2,							
AM-BH32 2-2.25,	AM-BH32 2.25-2.5,							
AM-BH32 2.5-2.75,	AM-BH32 2.75-3							
EA055: Moisture Content								
Snap Lock Bag - frozen (EA055-103)								
AM-BH26 2.75-3,	AM-BH18 1.75-2,	**06-Oct-2016**	**----**	----	----	**20-Oct-2016**	20-Oct-2016	✓
AM-BH24 2.75-3,	AM-BH10 1.75-2							
Snap Lock Bag - frozen (EA055-103)								
AM-BH29 1.75-2		**07-Oct-2016**	**----**	----	----	**20-Oct-2016**	21-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103)								
AM-BH32 2.75-3		**10-Oct-2016**	**----**	----	----	**20-Oct-2016**	24-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**----**	----	----	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH29 0.25-0.5,	AM-BH29 0-0.1	**07-Oct-2016**	**----**	----	----	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**----**	----	----	**18-Oct-2016**	24-Oct-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	04-Apr-2017	✓	**18-Oct-2016**	04-Apr-2017	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH29 0.25-0.5,	AM-BH29 0-0.1	**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	08-Apr-2017	✓	**18-Oct-2016**	08-Apr-2017	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020R-T)								
AM-BH29 0-0.1		**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	03-Nov-2016	✓	**19-Oct-2016**	03-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T) AM-BH29 0.25-0.5, AM-BH29 0-0.1	**07-Oct-2016**	**18-Oct-2016**	04-Nov-2016	✓	**19-Oct-2016**	04-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	07-Nov-2016	✓	**19-Oct-2016**	07-Nov-2016	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup							
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup							
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	8	72	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite R	EG020R-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020. Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

Preparation Methods	Method	Matrix	Method Descriptions
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab. Name:	ALS Environmental
Sampler By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐	EMAIL ☑ BULLETIN BOARD ☐	
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre: scurti@golder.com.au	

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Golder Associates
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
1	AM-BH13	0	0.25	soil	6/10/2016		bag		1	N		X	X			
2	AM-BH13	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
3	AM-BH13	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
4	AM-BH13	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
5	AM-BH13	1	1.25	soil	6/10/2016		bag		1	N		X	X			
6	AM-BH13	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
7	AM-BH13	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
8	AM-BH13	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
9	AM-BH13	2	2.25	soil	6/10/2016		bag		1	N		X	X			
10	AM-BH13	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
11	AM-BH13	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
12	AM-BH13	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			X

Environmental Division
Brisbane
Work Order Reference
EB1624749

Telephone : + 61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

TYPE OF SEAL & ORDER Analytical Laboratory LAB BATCH NUMBER

Security Seal Chilled Bill to:

Sample Container Frozen Address

Cool Box Ambient

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORAT

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project No:	1538021	Order/Job No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

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Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
13	AM-BH14	0	0.25	soil	6/10/2016		bag		1	N		X	X			
14	AM-BH14	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
15	AM-BH14	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
16	AM-BH14	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
17	AM-BH14	1	1.25	soil	6/10/2016		bag		1	N		X	X			X
18	AM-BH14	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
19	AM-BH14	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
20	AM-BH14	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
21	AM-BH14	2	2.25	soil	6/10/2016		bag		1	N		X	X			
22	AM-BH14	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
23	AM-BH14	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
24	AM-BH14	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRES	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Billed	
Suitable Containers		Frozen		Advised	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project No:	1538021	Order/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
25	AM-BH15	0	0.25	soil	7/10/2016		bag		1	N		X	X						
26	AM-BH15	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
27	AM-BH15	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
28	AM-BH15	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
29	AM-BH15	1	1.25	soil	7/10/2016		bag		1	N		X	X						
30	AM-BH15	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
31	AM-BH15	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
32	AM-BH15	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X			X			
33	AM-BH15	2	2.25	soil	7/10/2016		bag		1	N		X	X						
34	AM-BH15	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
35	AM-BH15	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
36	AM-BH15	2.75	3	soil	7/10/2016		bag+jar		2	N		X	X						
37	AM-BH15	0	0.1	soil	7/10/2016		jar		1	N							X	X	X
38	QAQC005			soil	7/10/2016		jar		1	N				X.	X	X			
	QAQC006			soil	7/10/2016		jar		1	N		PLEASE SHIP TO EUROFINS							
39	QAQC007			soil	7/10/2016		jar		1	N	X								
40	QAQC008			soil	7/10/2016		jar		1	N	X								

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analyzing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled	Bill to:	
Suitable Containers		Frozen	Address	
Cool Box		Ambient		

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Sub/Order No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Phone: (07) 3721 5400
Fax: (07) 3721 5401
Golder Associates
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
41	AM-BH16	0	0.25	soil	7/10/2016		bag		1	N		X	X						
42	AM-BH16	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
43	AM-BH16	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
44	AM-BH16	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
45	AM-BH16	1	1.25	soil	7/10/2016		bag		1	N		X	X						
46	AM-BH16	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
47	AM-BH16	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
48	AM-BH16	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X						
49	AM-BH16	2	2.25	soil	7/10/2016		bag		1	N		X	X						
50	AM-BH16	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
51	AM-BH16	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
52	AM-BH16	2.75	3	soil	7/10/2016		bag+jar		2	N		X'	X			X			
53	AM-BH16	0	0.1	soil	7/10/2016		jar		1	N							X	X	X
54	QAQC001			soil	7/10/2016		jar		2	N				X	X	X			
	QAQC002			soil	7/10/2016		jar		2	N	PLEASE SHIP TO EUROFINS								
55	QAQC003			soil	7/10/2016		jar		1	N	X								
56	QAQC004			soil	7/10/2016		jar		1	N	X								

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved: J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal: Chilled
Suitable Containers: Frozen
Cool Box: Ambient

LAB BATCH NUMBER
Billed:
Address:

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Order/Quote No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Golder Associates

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters	EP075B - PAHs
54	AM-BH25	0	0.25	soil			bag		1	N		X	X				
55	AM-BH25	0.25	0.5	soil			bag+ 2 jars		3	N		X	X	X	X	X	
56	AM-BH25	0.5	0.75	soil			bag		1	N		X	X				
60	AM-BH25	1.5	1.75	soil			bag		2	N		X	X				
61	AM-BH25	1.75	2	soil			bag+jar		1	N		X	X				
62	AM-BH25	2	2.25	soil			bag		1	N		X	X				
63	AM-BH25	2.25	2.5	soil			bag		1	N		X	X				
64	AM-BH25	2.5	2.75	soil			bag		2	N		X	X				
65	AM-BH25	2.75	3	soil			bag+jar		1	N		X	X			X	
66	AM-BH25	0.5	0.6	soil			jar		1	N							X

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Bilton	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Project ID:	1538021	Order Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
AM-BH30	0	0.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
AM-BH30	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			X
AM-BH30	1	1.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			
AM-BH30	2	2.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.75	3	soil	10/10/2016		jar		1	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER		
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Bill to	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
79	AM-BH31	0	0.25	soil	10/10/2016		bag		1	N		X	X			
80	AM-BH31	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
81	AM-BH31	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
82	AM-BH31	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			
83	AM-BH31	1	1.25	soil	10/10/2016		bag		1	N		X	X			
84	AM-BH31	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
85	AM-BH31	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
86	AM-BH31	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			X
87	AM-BH31	2	2.25	soil	10/10/2016		bag		1	N		X	X			
88	AM-BH31	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
89	AM-BH31	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
90	AM-BH31	2.75	3	soil	10/10/2016		bag+jar		2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CURTIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled		Bill to	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1624749**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 5
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 14-Oct-2016 4:00 PM	Issue Date	: 18-Oct-2016
Client Requested Due Date	: 21-Oct-2016	Scheduled Reporting Date	: **21-Oct-2016**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 1.5, 1.2, 1.7°C
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 90 / 85

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **As only a soil jar suitable for PFAS testing was received for "AM-BH30 2.75-3" (ALS #78), pH Field and Fox (EA037) will not be tested on this sample.**
- **Samples "QAQC006" and "QAQC002" will be forwarded to Eurofins, as requested.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The estimated due date for this data is the 25/10/16.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Please be advised that a soil jar for PFAS testing was not received for "AM-BH14 1-1.25" (ALS #17), however one was received for "AM-BH14 0.75-1" (ALS #16). PFAS testing has been assigned to ALS #16, however if testing for this is not required on this sample, please contact ALS Client Services at ALSEnviro.Brisbane@alsglobal.com , ASAP.**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-001	[06-Oct-2016]	AM-BH13 0-0.25	✓						
EB1624749-002	[06-Oct-2016]	AM-BH13 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-003	[06-Oct-2016]	AM-BH13 0.5-0.75	✓						
EB1624749-004	[06-Oct-2016]	AM-BH13 0.75-1	✓						
EB1624749-005	[06-Oct-2016]	AM-BH13 1-1.25	✓						
EB1624749-006	[06-Oct-2016]	AM-BH13 1.25-1.5	✓						
EB1624749-007	[06-Oct-2016]	AM-BH13 1.5-1.75	✓						
EB1624749-008	[06-Oct-2016]	AM-BH13 1.75-2	✓						
EB1624749-009	[06-Oct-2016]	AM-BH13 2-2.25	✓						
EB1624749-010	[06-Oct-2016]	AM-BH13 2.25-2.5	✓						
EB1624749-011	[06-Oct-2016]	AM-BH13 2.5-2.75	✓						
EB1624749-012	[06-Oct-2016]	AM-BH13 2.75-3	✓	✓		✓			
EB1624749-013	[06-Oct-2016]	AM-BH14 0-0.25	✓						
EB1624749-014	[06-Oct-2016]	AM-BH14 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-015	[06-Oct-2016]	AM-BH14 0.5-0.75	✓						
EB1624749-016	[06-Oct-2016]	AM-BH14 0.75-1	✓	✓		✓			
EB1624749-017	[06-Oct-2016]	AM-BH14 1-1.25	✓						
EB1624749-018	[06-Oct-2016]	AM-BH14 1.25-1.5	✓						
EB1624749-019	[06-Oct-2016]	AM-BH14 1.5-1.75	✓						
EB1624749-020	[06-Oct-2016]	AM-BH14 1.75-2	✓						
EB1624749-021	[06-Oct-2016]	AM-BH14 2-2.25	✓						
EB1624749-022	[06-Oct-2016]	AM-BH14 2.25-2.5	✓						
EB1624749-023	[06-Oct-2016]	AM-BH14 2.5-2.75	✓						
EB1624749-024	[06-Oct-2016]	AM-BH14 2.75-3	✓						
EB1624749-025	[07-Oct-2016]	AM-BH15 0-0.25	✓						
EB1624749-026	[07-Oct-2016]	AM-BH15 0.25-0.5	✓	✓		✓	✓		✓
EB1624749-027	[07-Oct-2016]	AM-BH15 0.5-0.75	✓						
EB1624749-028	[07-Oct-2016]	AM-BH15 0.75-1	✓						
EB1624749-029	[07-Oct-2016]	AM-BH15 1-1.25	✓						
EB1624749-030	[07-Oct-2016]	AM-BH15 1.25-1.5	✓						
EB1624749-031	[07-Oct-2016]	AM-BH15 1.5-1.75	✓						
EB1624749-032	[07-Oct-2016]	AM-BH15 1.75-2	✓	✓		✓			
EB1624749-033	[07-Oct-2016]	AM-BH15 2-2.25	✓						
EB1624749-034	[07-Oct-2016]	AM-BH15 2.25-2.5	✓						
EB1624749-035	[07-Oct-2016]	AM-BH15 2.5-2.75	✓						

			SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-036	[07-Oct-2016]	AM-BH15 2.75-3	✓						
EB1624749-037	[07-Oct-2016]	AM-BH15 0-0.1		✓					
EB1624749-038	[07-Oct-2016]	QAQC005		✓		✓	✓		✓
EB1624749-041	[07-Oct-2016]	AM-BH16 0-0.25	✓						
EB1624749-042	[07-Oct-2016]	AM-BH16 0.25-0.5	✓	✓		✓	✓		✓
EB1624749-043	[07-Oct-2016]	AM-BH16 0.5-0.75	✓						
EB1624749-044	[07-Oct-2016]	AM-BH16 0.75-1	✓						
EB1624749-045	[07-Oct-2016]	AM-BH16 1-1.25	✓						
EB1624749-046	[07-Oct-2016]	AM-BH16 1.25-1.5	✓						
EB1624749-047	[07-Oct-2016]	AM-BH16 1.5-1.75	✓						
EB1624749-048	[07-Oct-2016]	AM-BH16 1.75-2	✓						
EB1624749-049	[07-Oct-2016]	AM-BH16 2-2.25	✓						
EB1624749-050	[07-Oct-2016]	AM-BH16 2.25-2.5	✓						
EB1624749-051	[07-Oct-2016]	AM-BH16 2.5-2.75	✓						
EB1624749-052	[07-Oct-2016]	AM-BH16 2.75-3	✓	✓		✓			
EB1624749-053	[07-Oct-2016]	AM-BH16 0-0.1		✓					
EB1624749-054	[07-Oct-2016]	QAQC001		✓		✓	✓		✓
EB1624749-057	[07-Oct-2016]	AM-BH25 0-0.25	✓						
EB1624749-058	[07-Oct-2016]	AM-BH25 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-059	[07-Oct-2016]	AM-BH25 0.5-0.75	✓						
EB1624749-060	[07-Oct-2016]	AM-BH25 1.5-1.75	✓						
EB1624749-061	[07-Oct-2016]	AM-BH25 1.75-2	✓						
EB1624749-062	[07-Oct-2016]	AM-BH25 2-2.25	✓						
EB1624749-063	[07-Oct-2016]	AM-BH25 2.25-2.5	✓						
EB1624749-064	[07-Oct-2016]	AM-BH25 2.5-2.75	✓						
EB1624749-065	[07-Oct-2016]	AM-BH25 2.75-3	✓	✓		✓			
EB1624749-066	[07-Oct-2016]	AM-BH25 0.5-0.6		✓					
EB1624749-067	[10-Oct-2016]	AM-BH30 0-0.25	✓						
EB1624749-068	[10-Oct-2016]	AM-BH30 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-069	[10-Oct-2016]	AM-BH30 0.5-0.75	✓						
EB1624749-070	[10-Oct-2016]	AM-BH30 0.75-1	✓	✓		✓			
EB1624749-071	[10-Oct-2016]	AM-BH30 1-1.25	✓						
EB1624749-072	[10-Oct-2016]	AM-BH30 1.25-1.5	✓						
EB1624749-073	[10-Oct-2016]	AM-BH30 1.5-1.75	✓						
EB1624749-074	[10-Oct-2016]	AM-BH30 1.75-2	✓						
EB1624749-075	[10-Oct-2016]	AM-BH30 2-2.25	✓						
EB1624749-076	[10-Oct-2016]	AM-BH30 2.25-2.5	✓						
EB1624749-077	[10-Oct-2016]	AM-BH30 2.5-2.75	✓						
EB1624749-079	[10-Oct-2016]	AM-BH31 0-0.25	✓						
EB1624749-080	[10-Oct-2016]	AM-BH31 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-081	[10-Oct-2016]	AM-BH31 0.5-0.75	✓						

			SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-082	[10-Oct-2016]	AM-BH31 0.75-1	✓						
EB1624749-083	[10-Oct-2016]	AM-BH31 1-1.25	✓						
EB1624749-084	[10-Oct-2016]	AM-BH31 1.25-1.5	✓						
EB1624749-085	[10-Oct-2016]	AM-BH31 1.5-1.75	✓						
EB1624749-086	[10-Oct-2016]	AM-BH31 1.75-2	✓	✓		✓			
EB1624749-087	[10-Oct-2016]	AM-BH31 2-2.25	✓						
EB1624749-088	[10-Oct-2016]	AM-BH31 2.25-2.5	✓						
EB1624749-089	[10-Oct-2016]	AM-BH31 2.5-2.75	✓						
EB1624749-090	[10-Oct-2016]	AM-BH31 2.75-3	✓						

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	(On Hold) SOIL No analysis requested	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG020T (solids) Total Metals by ICP-MS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-02 8 Metals (incl. Digestion)
EB1624749-037	[07-Oct-2016]	AM-BH15 0-0.1		✓	✓		✓
EB1624749-039	[07-Oct-2016]	QAQC007	✓				
EB1624749-040	[07-Oct-2016]	QAQC008	✓				
EB1624749-053	[07-Oct-2016]	AM-BH16 0-0.1		✓	✓		✓
EB1624749-055	[07-Oct-2016]	QAQC003	✓				
EB1624749-056	[07-Oct-2016]	QAQC004	✓				
EB1624749-066	[07-Oct-2016]	AM-BH25 0.5-0.6				✓	
EB1624749-078	[10-Oct-2016]	AM-BH30 2.75-3	✓				

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au

SERENA CURTI

- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1624749**	Page	: 1 of 105
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016 16:00
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 25-Oct-2016 13:16
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 90		
No. of samples analysed	: 85		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Matt Frost	Senior Organic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005T (Total Metals): Sample EB1624685-033 shows poor matrix spike recovery due to sample heterogeneity. Confirmed by visual inspection.
- EG035T (Total Mercury): Sample EB1624685-033 shows poor spike recovery due to sample heterogeneity. Confirmed by visual inspection
- EP068 Pesticides: Sample 'AM-BH14 0.25-0.5' shows poor matrix spike recovery for 4,4/ due to matrix interference. Confirmed by re-extraction and re-analysis.
- EP068 Pesticides: High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- EP075(SIM): High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.6	7.6	6.9	7.1
ø pH (Fox)	----	0.1	pH Unit	5.2	5.6	5.7	5.2	4.4
ø Reaction Rate	----	1	-	1	2	2	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	9.8	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	7	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	9	----	----	----
Copper	7440-50-8	5	mg/kg	----	23	----	----	----
Lead	7439-92-1	5	mg/kg	----	14	----	----	----
Nickel	7440-02-0	2	mg/kg	----	9	----	----	----
Zinc	7440-66-6	5	mg/kg	----	30	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	114	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	102	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	122	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	118	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	100	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	121	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	113	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	132	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	99.4	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	84.9	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	88.2	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	93.7	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.8	5.9	5.0	5.7
ø pH (Fox)	----	0.1	pH Unit	4.2	4.4	3.0	3.4	3.3
ø Reaction Rate	----	1	-	3	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.7	6.5	7.0	7.8	5.9
ø pH (Fox)	----	0.1	pH Unit	3.4	4.8	4.7	6.0	2.7
ø Reaction Rate	----	1	-	2	2	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.2	----	11.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	8	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	21	----
Copper	7440-50-8	5	mg/kg	----	----	----	24	----
Lead	7439-92-1	5	mg/kg	----	----	----	13	----
Nickel	7440-02-0	2	mg/kg	----	----	----	14	----
Zinc	7440-66-6	5	mg/kg	----	----	----	40	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	**119**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	**112**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	**116**	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	**109**	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	**95.1**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	**116**	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	**108**	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	**132**	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	**94.1**	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	**79.3**	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	**92.0**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	**96.0**	----	**104**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.3	5.2	8.0	5.5	5.7
ø pH (Fox)	----	0.1	pH Unit	2.4	2.5	3.2	2.9	3.0
ø Reaction Rate	----	1	-	4	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	6.8	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**90.5**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	7.2	7.2	7.3	7.0
ø pH (Fox)	----	0.1	pH Unit	5.0	5.6	5.7	5.7	1.8
ø Reaction Rate	----	1	-	2	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.0	6.5	7.2	7.0	7.3
ø pH (Fox)	----	0.1	pH Unit	5.4	4.4	5.0	4.8	4.8
ø Reaction Rate	----	1	-	3	2	3	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	23.9	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	14	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	41	----	----	----	----
Copper	7440-50-8	5	mg/kg	22	----	----	----	----
Lead	7439-92-1	5	mg/kg	10	----	----	----	----
Nickel	7440-02-0	2	mg/kg	39	----	----	----	----
Zinc	7440-66-6	5	mg/kg	90	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**113**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**106**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**108**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**105**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**102**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**103**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**110**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**123**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**99.0**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**89.6**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**97.4**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**96.0**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.1	6.9	6.9	7.0	7.0
ø pH (Fox)	----	0.1	pH Unit	4.6	4.4	4.2	4.4	2.5
ø Reaction Rate	----	1	-	3	3	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.4	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	94.3	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.3	----	----	7.2	6.3
ø pH (Fox)	----	0.1	pH Unit	2.5	----	----	3.1	4.3
ø Reaction Rate	----	1	-	4	----	----	3	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	16.8	23.4	----	24.2
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	8	13	----	<5
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg	----	46	39	----	55
Copper	7440-50-8	5	mg/kg	----	34	31	----	20
Lead	7439-92-1	5	mg/kg	----	10	17	----	6
Nickel	7440-02-0	2	mg/kg	----	52	59	----	18
Zinc	7440-66-6	5	mg/kg	----	56	236	----	33
Titanium	7440-32-6	10	mg/kg	----	360	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	1.4	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	<0.05	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	<0.2	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Diazinon	333-41-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	<0.05	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	<0.2	----	<0.2
Malathion	121-75-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Fenthion	55-38-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Parathion	56-38-2	0.2	mg/kg	----	----	<0.2	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	----	----	<0.05	----	<0.05
Ethion	563-12-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	<0.05	----	<0.05
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**0.6**	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.2**	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	<10
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	<0.001	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	**112**	----	**116**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	**101**	----	**106**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	**109**	----	**119**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	**103**	----	**110**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	**97.8**	----	**106**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	**104**	----	**103**
Anthracene-d10	1719-06-8	0.5	%	----	----	**104**	----	**113**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	**116**	----	**125**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	**98.0**	----	**110**
Toluene-D8	2037-26-5	0.2	%	----	----	**86.8**	----	**90.0**
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	**95.4**	----	**101**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	**101**	----	**92.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.5	5.3	5.9	6.4	6.7
ø pH (Fox)	----	0.1	pH Unit	2.6	3.2	3.8	3.4	3.5
ø Reaction Rate	----	1	-	2	2	2	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.3	6.2	6.5	6.4	7.1
ø pH (Fox)	----	0.1	pH Unit	3.7	3.6	3.3	1.7	2.2
ø Reaction Rate	----	1	-	3	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	23.9
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	91.6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	6.7	4.3	5.9
ø pH (Fox)	----	0.1	pH Unit	----	----	3.8	4.6	4.0
ø Reaction Rate	----	1	-	----	----	3	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	19.1	23.7	----	11.6	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	11	8	----	10	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	----
Chromium	7440-47-3	2	mg/kg	37	54	----	54	----
Copper	7440-50-8	5	mg/kg	25	30	----	41	----
Lead	7439-92-1	5	mg/kg	17	13	----	15	----
Nickel	7440-02-0	2	mg/kg	18	33	----	31	----
Zinc	7440-66-6	5	mg/kg	65	42	----	44	----
Titanium	7440-32-6	10	mg/kg	340	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	3.0	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	**0.0004**	----	**0.0005**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	**0.0004**	----	**0.0020**	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	**0.0008**	----	**0.0025**	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	**0.0008**	----	**0.0025**	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	**0.0008**	----	**0.0025**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	**115**	----	**108**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	**103**	----	**98.5**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	**119**	----	**117**	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	**109**	----	**108**	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	**102**	----	**94.1**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	**105**	----	**116**	----
Anthracene-d10	1719-06-8	0.5	%	----	**113**	----	**117**	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	**132**	----	**128**	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	**104**	----	**93.1**	----
Toluene-D8	2037-26-5	0.2	%	----	**89.4**	----	**83.0**	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	**97.6**	----	**83.7**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	**95.2**	----	**93.4**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.9	6.0	6.1	4.7	5.9
ø pH (Fox)	----	0.1	pH Unit	3.2	3.5	4.1	2.9	4.5
ø Reaction Rate	----	1	-	3	3	3	2	1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.6	----	4.5	3.9	4.2
ø pH (Fox)	----	0.1	pH Unit	5.4	----	2.8	2.2	2.5
ø Reaction Rate	----	1	-	2	----	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	25.2	28.6	----	15.1	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	8	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	39	----
Copper	7440-50-8	5	mg/kg	----	----	----	16	----
Lead	7439-92-1	5	mg/kg	----	----	----	12	----
Nickel	7440-02-0	2	mg/kg	----	----	----	24	----
Zinc	7440-66-6	5	mg/kg	----	----	----	54	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	104	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	98.4	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	113	----	104	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	102	----	97.1	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	106	----	91.9	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	100	----	110	----
Anthracene-d10	1719-06-8	0.5	%	----	111	----	115	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	116	----	122	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	88.7	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	77.2	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	85.4	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	91.5	----	----	86.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.4	6.4	6.8	7.1	7.2
ø pH (Fox)	----	0.1	pH Unit	3.8	4.2	4.0	1.8	1.8
ø Reaction Rate	----	1	-	2	3	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	34.4	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**86.4**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.0	8.1	8.2	5.2	4.2
ø pH (Fox)	----	0.1	pH Unit	2.4	2.0	2.0	3.0	2.4
ø Reaction Rate	----	1	-	4	4	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	17.5
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	19
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	<1
Chromium	7440-47-3	2	mg/kg	----	----	----	----	41
Copper	7440-50-8	5	mg/kg	----	----	----	----	20
Lead	7439-92-1	5	mg/kg	----	----	----	----	13
Nickel	7440-02-0	2	mg/kg	----	----	----	----	41
Zinc	7440-66-6	5	mg/kg	----	----	----	----	63
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	**0.0005**
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	**0.0005**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	**110**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	**100**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	**108**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	**99.3**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	**94.6**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	**113**
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	**118**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	**126**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	**100**
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	**79.5**
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	**94.5**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	**95.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	3.9	5.7	5.1	5.8	6.5
ø pH (Fox)	----	0.1	pH Unit	2.2	3.9	2.5	1.8	1.9
ø Reaction Rate	----	1	-	2	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.0	7.1	7.4	7.8	7.8
ø pH (Fox)	----	0.1	pH Unit	1.8	1.7	1.7	2.0	1.7
ø Reaction Rate	----	1	-	4	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	36.0	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**82.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	138
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	23	135
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	155
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	157
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1624749**	Page	: 1 of 19
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 25-Oct-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 90		
No. of samples analysed	: 85		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Matt Frost	Senior Organic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA037: Ass Field Screening Analysis (QC Lot: 621294)									
EB1624749-001	AM-BH13 0-0.25	EA037: pH (F)	----	0.1	pH Unit	7.4	7.4	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.2	5.1	1.94	0% - 20%
EB1624749-011	AM-BH13 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	5.7	5.5	3.57	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.4	3.5	2.90	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621295)									
EB1624749-021	AM-BH14 2-2.25	EA037: pH (F)	----	0.1	pH Unit	6.8	7.0	2.90	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.0	4.8	4.08	0% - 20%
EB1624749-031	AM-BH15 1.5-1.75	EA037: pH (F)	----	0.1	pH Unit	7.1	7.0	1.42	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.6	4.5	2.20	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621296)									
EB1624749-045	AM-BH16 1-1.25	EA037: pH (F)	----	0.1	pH Unit	5.9	5.8	1.71	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.8	3.8	0.00	0% - 20%
EB1624749-059	AM-BH25 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	5.9	6.0	1.68	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.0	3.9	2.53	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621297)									
EB1624749-070	AM-BH30 0.75-1	EA037: pH (F)	----	0.1	pH Unit	5.4	5.5	1.83	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.8	3.7	2.67	0% - 20%
EB1624749-081	AM-BH31 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	3.9	3.9	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.2	2.3	4.44	0% - 20%
EA055: Moisture Content (QC Lot: 620751)									
EB1624685-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	16.4	16.6	1.12	0% - 50%
EB1624685-023	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	3.8	3.9	0.00	No Limit
EA055: Moisture Content (QC Lot: 620757)									
EB1624749-002	AM-BH13 0.25-0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	9.8	9.6	2.30	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 620766)									
EB1624685-005	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	8.3	8.2	0.00	No Limit
EA055: Moisture Content (QC Lot: 624690)									
EB1623981-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	4.8	4.6	4.61	No Limit
EB1623981-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	25.5	26.2	2.67	0% - 20%
EA055: Moisture Content (QC Lot: 624691)									
EB1624749-052	AM-BH16 2.75-3	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	23.9	23.3	2.31	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 620763)									
EB1624685-032	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	25	25	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	12	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	54	53	0.00	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	31	31	0.00	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	11	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	41	40	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	16	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	44	44	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 620765)									
EB1624749-037	AM-BH15 0-0.1	EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	1.4	1.7	13.2	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 620764)									
EB1624685-032	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620748)									
EB1624685-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	0.08	0.07	14.7	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620748) - continued									
EB1624685-001	Anonymous	EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	0.08	0.07	13.3	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620755)									
EB1624749-002	AM-BH13 0.25-0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620755) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620748)									
EB1624685-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620755)									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620755) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 620754)									
EB1624749-002	AM-BH13 0.25-0.5	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 620754)									
EB1624749-002	AM-BH13 0.25-0.5	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620746)									
EB1624685-023	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EB1624685-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620746) - continued									
EB1624685-001	Anonymous	EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620753)									
EB1624749-002	AM-BH13 0.25-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620747)									
EB1624685-033	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	100	120	15.1	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1624685-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EB1624685-033	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620747)									
EB1624685-033	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	160	190	14.4	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1624685-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EB1624685-033	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EB1624685-033	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 624743) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0005	0.0006	18.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0020	0.0022	12.4	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 624743) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620763)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	93.9	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	102	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	95.9	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	105	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	102	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	109	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	104	87	127
EG020T: Total Metals by ICP-MS (QCLot: 620765)								
EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	<0.5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620764)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	100	78	122
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	101	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	85.1	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.8	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	103	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	102	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	106	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	107	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	100	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	110	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	97.5	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	80.2	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.4	55	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748) - continued								
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	98.1	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 620755)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	# 114	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	99.7	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.1	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	119	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	108	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	116	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	115	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	103	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	113	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	106	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	118	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	113	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.6	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	107	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	121	55	129
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	111	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	99.2	41	114
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	65.7	25	120
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	113	35	135
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	94.8	44	131
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.7	70	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748) - continued								
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	109	70	130
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	80.0	60	122
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	64	125
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	103	69	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.9	66	120
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	102	57	118
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	121	70	130
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	117	62	127
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	106	80	130
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	98.5	55	106
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	101	80	134
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	120	61	123
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	119	57	124
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	46.7	35	127
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620755)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	102	41	114
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	67.2	25	120
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	112	35	135
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	44	131
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	111	70	131
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	107	70	130
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	81.3	60	122
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	105	64	125
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	108	69	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	98.5	66	120
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	102	57	118
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	# 131	70	130
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	123	62	127
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	114	80	130
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	103	55	106
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	107	80	134
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	112	61	123
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	# 126	57	124
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	35.5	35	127
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	61.8	47	112
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	72.0	55	108
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620754)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	65.8	46	115
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	70.9	53	113
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620746)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	101	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	102	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	106	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	104	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	110	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	113	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	112	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	114	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	107	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	110	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	108	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	112	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	85.5	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	91.9	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	88.7	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	106	64	131
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620753)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	111	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	116	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	111	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	112	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	# 122	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	# 127	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	132	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	109	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	# 125	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	110	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	115	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	110	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	113	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	114	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	120	64	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620747)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	82.6	79	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	87.4	77	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620750)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	96.3	66	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620756)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	71.8	66	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620747)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	84.9	81	122
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	83.5	74	122
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620750)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	89.8	66	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620756)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	67.4	66	119
EP080: BTEXN (QCLot: 620750)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	90.9	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	97.1	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	92.5	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	94.6	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	98.7	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	101	72	115
EP080: BTEXN (QCLot: 620756)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	86.8	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.3	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	89.1	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	86.8	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.0	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	100	72	115
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	54	125

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 624743)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00125 mg/kg	83.2	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.0	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.3	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.4	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.3	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.4	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.6	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 624743)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	103	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.1	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.3	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.6	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.1	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.5	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 624743)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.1	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	90.0	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.4	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.6	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 620763)							
EB1624685-033	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	# Not Determined	70	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620763) - continued							
EB1624685-033	Anonymous	EG005T: Cadmium	7440-43-9	25 mg/kg	114	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	# Not Determined	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	# 9.19	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	97.1	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	123	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620764)							
EB1624685-033	Anonymous	EG035T: Mercury	7439-97-6	2.5 mg/kg	# 139	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748)							
EB1624685-007	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	97.6	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	90.7	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	97.4	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	104	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	103	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	81.4	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620755)							
EB1624749-014	AM-BH14 0.25-0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	70.5	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	84.5	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	74.9	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	90.2	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	94.2	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	# 57.7	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748)							
EB1624685-007	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	90.0	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	75.8	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	105	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	111	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	103	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620755)							
EB1624749-014	AM-BH14 0.25-0.5	EP068: Diazinon	333-41-5	0.5 mg/kg	89.6	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	86.5	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	107	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	95.6	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	93.6	70	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754) - continued							
EB1624749-014	AM-BH14 0.25-0.5	EP071SG-S: C10 - C14 Fraction	----	318 mg/kg	62.5	47	130
		EP071SG-S: C15 - C28 Fraction	----	531 mg/kg	68.3	55	130
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620754)							
EB1624749-014	AM-BH14 0.25-0.5	EP071SG-S: >C10 - C16 Fraction	----	428 mg/kg	64.4	46	130
		EP071SG-S: >C16 - C34 Fraction	----	395 mg/kg	66.8	53	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620746)							
EB1624685-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	101	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	110	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620753)							
EB1624749-014	AM-BH14 0.25-0.5	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	116	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	124	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620747)							
EB1624685-004	Anonymous	EP071: C10 - C14 Fraction	----	318 mg/kg	82.4	70	130
		EP071: C15 - C28 Fraction	----	531 mg/kg	87.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: C6 - C9 Fraction	----	8 mg/kg	95.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: C6 - C9 Fraction	----	8 mg/kg	78.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620747)							
EB1624685-004	Anonymous	EP071: >C10 - C16 Fraction	----	428 mg/kg	84.2	70	130
		EP071: >C16 - C34 Fraction	----	395 mg/kg	84.9	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	93.8	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	76.0	70	130
EP080: BTEXN (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	93.3	70	130
		EP080: Toluene	108-88-3	2 mg/kg	91.1	70	130
EP080: BTEXN (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: Benzene	71-43-2	2 mg/kg	80.5	70	130
		EP080: Toluene	108-88-3	2 mg/kg	76.5	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	75.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	77.1	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	72.6	50	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743) - continued							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	94.9	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	86.0	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.00125 mg/kg	81.3	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00125 mg/kg	67.8	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	82.2	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	67.8	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	90.2	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	109	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	112	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	102	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	114	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	91.6	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	105	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	94.9	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	99.4	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	89.7	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	89.9	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.00312 mg/kg	94.3	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	73.4	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	112	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	109	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	98.6	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	110	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	87.3	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	103	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1624749**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Site	: Brisbane Airport	Issue Date	: 25-Oct-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 90
Order number	: 1538021	No. of samples analysed	: 85

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	QC-620755-002	----	**Hexachlorobenzene (HCB)**	118-74-1	114 %	54-112%	**Recovery greater than upper control limit**
EP068B: Organophosphorus Pesticides (OP)	QC-620755-002	----	**Pirimphos-ethyl**	23505-41-1	131 %	70-130%	**Recovery greater than upper control limit**
EP068B: Organophosphorus Pesticides (OP)	QC-620755-002	----	**Carbophenothion**	786-19-6	126 %	57-124%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Anthracene**	120-12-7	122 %	72-115%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Fluoranthene**	206-44-0	127 %	70-116%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Chrysene**	218-01-9	125 %	66-119%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Arsenic**	7440-38-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Chromium**	7440-47-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Copper**	7440-50-8	9.19 %	70-130%	**Recovery less than lower data quality objective**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG035T: Total Recoverable Mercury by FIMS	EB1624685--033	Anonymous	**Mercury**	7439-97-6	139 %	70-130%	**Recovery greater than upper data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB1624749--014	AM-BH14 0.25-0.5	**4.4`-DDT**	50-29-3	57.7 %	70-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH13 0-0.25,	AM-BH13 0.25-0.5,	**06-Oct-2016**	**19-Oct-2016**	04-Apr-2017	✓	**19-Oct-2016**	04-Apr-2017	✓
AM-BH13 0.5-0.75,	AM-BH13 0.75-1,							
AM-BH13 1-1.25,	AM-BH13 1.25-1.5,							
AM-BH13 1.5-1.75,	AM-BH13 1.75-2,							
AM-BH13 2-2.25,	AM-BH13 2.25-2.5,							
AM-BH13 2.5-2.75,	AM-BH13 2.75-3,							
AM-BH14 0-0.25,	AM-BH14 0.25-0.5,							
AM-BH14 0.5-0.75,	AM-BH14 0.75-1,							
AM-BH14 1-1.25,	AM-BH14 1.25-1.5,							
AM-BH14 1.5-1.75,	AM-BH14 1.75-2,							
AM-BH14 2-2.25,	AM-BH14 2.25-2.5,							
AM-BH14 2.5-2.75,	AM-BH14 2.75-3							
Snap Lock Bag - frozen (EA037)								
AM-BH15 0-0.25,	AM-BH15 0.25-0.5,	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓
AM-BH15 0.5-0.75,	AM-BH15 0.75-1,							
AM-BH15 1-1.25,	AM-BH15 1.25-1.5,							
AM-BH15 1.5-1.75,	AM-BH15 1.75-2,							
AM-BH15 2-2.25,	AM-BH15 2.25-2.5,							
AM-BH15 2.5-2.75,	AM-BH15 2.75-3,							
AM-BH16 0-0.25,	AM-BH16 0.25-0.5,							
AM-BH16 0.5-0.75,	AM-BH16 0.75-1,							
AM-BH16 1-1.25,	AM-BH16 1.25-1.5,							
AM-BH16 1.5-1.75,	AM-BH16 1.75-2,							
AM-BH16 2-2.25,	AM-BH16 2.25-2.5,							
AM-BH16 2.5-2.75,	AM-BH16 2.75-3,							
AM-BH25 0-0.25,	AM-BH25 0.25-0.5,							
AM-BH25 0.5-0.75,	AM-BH25 1.5-1.75,							
AM-BH25 1.75-2,	AM-BH25 2-2.25,							
AM-BH25 2.25-2.5,	AM-BH25 2.5-2.75,							
AM-BH25 2.75-3								
Snap Lock Bag - frozen (EA037)								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis - Continued								
AM-BH30 0-0.25, AM-BH30 0.5-0.75, AM-BH30 1-1.25, AM-BH30 1.5-1.75, AM-BH30 2-2.25, AM-BH30 2.5-2.75, AM-BH31 0.25-0.5, AM-BH31 0.75-1, AM-BH31 1.25-1.5, AM-BH31 1.75-2, AM-BH31 2.25-2.5, AM-BH31 2.75-3	AM-BH30 0.25-0.5, AM-BH30 0.75-1, AM-BH30 1.25-1.5, AM-BH30 1.75-2, AM-BH30 2.25-2.5, AM-BH31 0-0.25, AM-BH31 0.5-0.75, AM-BH31 1-1.25, AM-BH31 1.5-1.75, AM-BH31 2-2.25, AM-BH31 2.5-2.75,	**10-Oct-2016**	**19-Oct-2016**	08-Apr-2017	✓	**19-Oct-2016**	08-Apr-2017	✓
EA055: Moisture Content								
Snap Lock Bag - frozen (EA055-103) AM-BH13 2.75-3,	AM-BH14 0.75-1	**06-Oct-2016**	**----**	----	----	**20-Oct-2016**	20-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103) AM-BH15 1.75-2, AM-BH25 2.75-3	AM-BH16 2.75-3,	**07-Oct-2016**	**----**	----	----	**20-Oct-2016**	21-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103) AM-BH30 0.75-1,	AM-BH31 1.75-2	**10-Oct-2016**	**----**	----	----	**20-Oct-2016**	24-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**----**	----	----	**18-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0-0.1, AM-BH25 0.25-0.5,	AM-BH15 0-0.1, AM-BH16 0.25-0.5, QAQC001, AM-BH25 0.5-0.6	**07-Oct-2016**	**----**	----	----	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**----**	----	----	**18-Oct-2016**	24-Oct-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**19-Oct-2016**	04-Apr-2017	✓	**19-Oct-2016**	04-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0-0.1, AM-BH25 0.25-0.5	AM-BH15 0-0.1, AM-BH16 0.25-0.5, QAQC001,	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T) AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**19-Oct-2016**	08-Apr-2017	✓	**19-Oct-2016**	08-Apr-2017	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020R-T) AM-BH15 0-0.1,	AM-BH16 0-0.1	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**19-Oct-2016**	03-Nov-2016	✓	**19-Oct-2016**	03-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH15 0.25-0.5, QAQC005, AM-BH16 0-0.1, AM-BH25 0.25-0.5	AM-BH15 0-0.1, AM-BH16 0.25-0.5, QAQC001,	**07-Oct-2016**	**19-Oct-2016**	04-Nov-2016	✓	**19-Oct-2016**	04-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**19-Oct-2016**	07-Nov-2016	✓	**19-Oct-2016**	07-Nov-2016	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068)								
AM-BH15 0.25-0.5, AM-BH16 0.25-0.5,	QAQC005, QAQC001	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068)								
AM-BH15 0.25-0.5, AM-BH16 0.25-0.5,	QAQC005, QAQC001	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH13 0.25-0.5, AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0.25-0.5, QAQC001, AM-BH25 0.5-0.6	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH25 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH30 0.25-0.5, AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) AM-BH13 0.25-0.5, AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0.25-0.5, QAQC001, AM-BH25 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080) AM-BH30 0.25-0.5, AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) AM-BH13 0.25-0.5, AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0.25-0.5, QAQC001, AM-BH25 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080) AM-BH30 0.25-0.5, AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) AM-BH13 0.25-0.5, AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0.25-0.5, QAQC001, AM-BH25 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080) AM-BH30 0.25-0.5, AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X) AM-BH13 0.25-0.5, AM-BH14 0.25-0.5,	AM-BH13 2.75-3, AM-BH14 0.75-1	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
HDPE Soil Jar (EP231X) AM-BH15 0.25-0.5, QAQC005, AM-BH16 2.75-3, AM-BH25 0.25-0.5,	AM-BH15 1.75-2, AM-BH16 0.25-0.5, QAQC001, AM-BH25 2.75-3	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
HDPE Soil Jar (EP231X) AM-BH30 0.25-0.5, AM-BH31 0.25-0.5,	AM-BH30 0.75-1, AM-BH31 1.75-2	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X) AM-BH13 0.25-0.5, AM-BH14 0.25-0.5,	AM-BH13 2.75-3, AM-BH14 0.75-1	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
HDPE Soil Jar (EP231X) AM-BH15 0.25-0.5, QAQC005, AM-BH16 2.75-3, AM-BH25 0.25-0.5,	AM-BH15 1.75-2, AM-BH16 0.25-0.5, QAQC001, AM-BH25 2.75-3	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
HDPE Soil Jar (EP231X) AM-BH30 0.25-0.5, AM-BH31 0.25-0.5,	AM-BH30 0.75-1, AM-BH31 1.75-2	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X) AM-BH13 0.25-0.5, AM-BH14 0.25-0.5,	AM-BH13 2.75-3, AM-BH14 0.75-1	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
HDPE Soil Jar (EP231X) AM-BH15 0.25-0.5, QAQC005, AM-BH16 2.75-3, AM-BH25 0.25-0.5,	AM-BH15 1.75-2, AM-BH16 0.25-0.5, QAQC001, AM-BH25 2.75-3	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
HDPE Soil Jar (EP231X) AM-BH30 0.25-0.5, AM-BH31 0.25-0.5,	AM-BH30 0.75-1, AM-BH31 1.75-2	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	8	80	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	7	58	12.07	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	3	25	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	21	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
TRH - Semivolatile Fraction	EP071	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite R	EG020R-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020. Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre:	scurti@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:
REBATCH OF EB1624693

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	Chromium Suite
AM-BH26	0	0.25	soil	6/10/2016		bag		1	N	X
AM-BH26	1.75	2	soil	6/10/2016		bag		1	N	X
AM-BH26	2	2.25	soil	6/10/2016		bag		1	N	X
AM-BH18	0.75	1	soil	6/10/2016		bag		1	N	X
AM-BH18	1.25	1.5	soil	6/10/2016		bag		1	N	X
AM-BH18	2	2.25	soil	6/10/2016		bag		1	N	X
AM-BH24	0.75	1	soil	6/10/2016		bag		1	N	X
AM-BH24	1.5	1.75	soil	6/10/2016		bag		1	N	X
AM-BH24	2.25	2.5	soil	6/10/2016		bag		1	N	X
AM-BH10	0	0.25	soil	6/10/2016		bag		1	N	X
AM-BH10	1.5	1.75	soil	6/10/2016		bag		1	N	X
AM-BH10	2.5	2.75	soil	6/10/2016		bag		1	N	X
AM-BH32	0	0.25	soil	10/10/2016		bag		1	N	X
AM-BH32	1	1.25	soil	10/10/2016		bag		1	N	X
AM-BH32	2	2.25	soil	10/10/2016		bag		1	N	X
AM-BH29	0.75	1	soil	7/10/2016		bag+jar		2	N	X
AM-BH29	1	1.25	soil	7/10/2016		bag		1	N	X
AM-BH29	2.5	2.75	soil	7/10/2016		bag		1	N	X

Environmental Division
Brisbane
Work Order Reference
EB1625883

Telephone : + 61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Serena Curti	GOLDER	28/10/2016	4pm
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1625883**	Page	: 1 of 6
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016 16:50
Order number	: 1538021	Date Analysis Commenced	: 03-Nov-2016
C-O-C number	: ----	Issue Date	: 03-Nov-2016 15:09
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 18		
No. of samples analysed	: 18		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- **The samples in this work order have been re-batched from EB1624693.**
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime ($CaCO_3$) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH18 0.75-1	AM-BH18 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625883-001	EB1625883-002	EB1625883-003	EB1625883-004	EB1625883-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.6	8.0	4.7	4.3	4.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	25	104	41
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.04	0.17	0.06
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.028	0.418	0.006	0.021	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	17	260	<10	13	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.63	3.42	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	126	683	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.20	1.09	----	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	0.05	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	0.05	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	<0.02	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	<10	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	<0.02	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.04	0.19	0.07
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	28	117	43
Liming Rate	----	1	kg CaCO3/t	<1	<1	2	9	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.03	0.42	0.04	0.19	0.07
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	17	260	28	117	43
Liming Rate excluding ANC	----	1	kg CaCO3/t	1	20	2	9	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH24 0.75-1	AM-BH24 1.5-1.75	AM-BH24 2.25-2.5	AM-BH10 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625883-006	EB1625883-007	EB1625883-008	EB1625883-009	EB1625883-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.7	8.1	4.2	5.5	6.3
Titratable Actual Acidity (23F)	----	2	mole H+ / t	33	<2	90	13	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.05	<0.02	0.14	0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.102	0.026	0.008	0.006
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	64	16	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	3.14	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	628	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	1.01	----	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	0.08	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	0.08	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	<0.02	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	<10	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	<0.02	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.06	<0.02	0.17	0.03	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	36	<10	106	18	<10
Liming Rate	----	1	kg CaCO3/t	3	<1	8	1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.06	0.10	0.17	0.03	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	36	64	106	18	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	3	5	8	1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1.5-1.75	AM-BH10 2.5-2.75	AM-BH32 0-0.25	AM-BH32 1-1.25	AM-BH32 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625883-011	EB1625883-012	EB1625883-013	EB1625883-014	EB1625883-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.1	4.8	7.4	4.5	4.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	25	43	<2	71	43
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.04	0.07	<0.02	0.11	0.07
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	1.70	3.69	0.037	0.269	2.31
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	1060	2300	23	168	1440
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	1.24	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	248	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	0.40	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	1.74	3.76	<0.02	0.38	2.38
Net Acidity (acidity units)	----	10	mole H+ / t	1080	2350	<10	239	1480
Liming Rate	----	1	kg CaCO3/t	81	176	<1	18	111
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	1.74	3.76	0.04	0.38	2.38
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	1080	2350	23	239	1480
Liming Rate excluding ANC	----	1	kg CaCO3/t	81	176	2	18	111

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0.75-1	AM-BH29 1-1.25	AM-BH29 2.5-2.75	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1625883-016	EB1625883-017	EB1625883-018	--------	--------
				Result	Result	Result	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.4	4.3	5.5	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	64	69	10	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.10	0.11	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.016	0.105	0.245	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	66	153	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.09	0.09	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	0.10	0.13	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	0.05	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	22	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	0.04	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	----	----
Net Acidity (sulfur units)	----	0.02	% S	0.13	0.25	0.26	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	80	156	163	----	----
Liming Rate	----	1	kg CaCO3/t	6	12	12	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.13	0.25	0.26	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	80	156	163	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	6	12	12	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1625883**	Page	: 1 of 3
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 03-Nov-2016
C-O-C number	: ----	Issue Date	: 03-Nov-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 18		
No. of samples analysed	: 18		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 638770)									
EB1625748-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.07	0.07	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	42	43	0.00	0% - 20%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.7	4.7	0.00	0% - 20%
EB1625883-010	AM-BH10 0-0.25	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.3	6.4	1.57	0% - 20%
EA033-B: Potential Acidity (QC Lot: 638770)									
EB1625748-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.005	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EB1625883-010	AM-BH10 0-0.25	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.006	0.008	14.5	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 638770)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.8 pH Unit	95.8	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	15 mole H+ / t	108	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 638770)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.295 % S	85.4	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 638770)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	100	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-D: Retained Acidity (QCLot: 638770)								
EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	0.052 % S	91.7	70	130
EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	<0.02	0.026 % S	109	70	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1625883**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016
Site	: Brisbane Airport	Issue Date	: 03-Nov-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 18
Order number	: 1538021	No. of samples analysed	: 18

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
80* dried soil (EA033)								
AM-BH26 0-0.25,	AM-BH26 1.75-2,	**06-Oct-2016**	**03-Nov-2016**	06-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH26 2-2.25,	AM-BH18 0.75-1,							
AM-BH18 1.25-1.5,	AM-BH18 2-2.25,							
AM-BH24 0.75-1,	AM-BH24 1.5-1.75,							
AM-BH24 2.25-2.5,	AM-BH10 0-0.25,							
AM-BH10 1.5-1.75,	AM-BH10 2.5-2.75							
80* dried soil (EA033)								
AM-BH29 0.75-1,	AM-BH29 1-1.25,	**07-Oct-2016**	**03-Nov-2016**	07-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH29 2.5-2.75								
80* dried soil (EA033)								
AM-BH32 0-0.25,	AM-BH32 1-1.25,	**10-Oct-2016**	**03-Nov-2016**	10-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH32 2-2.25								
EA033-B: Potential Acidity								
80* dried soil (EA033)								
AM-BH26 0-0.25,	AM-BH26 1.75-2,	**06-Oct-2016**	**03-Nov-2016**	06-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH26 2-2.25,	AM-BH18 0.75-1,							
AM-BH18 1.25-1.5,	AM-BH18 2-2.25,							
AM-BH24 0.75-1,	AM-BH24 1.5-1.75,							
AM-BH24 2.25-2.5,	AM-BH10 0-0.25,							
AM-BH10 1.5-1.75,	AM-BH10 2.5-2.75							
80* dried soil (EA033)								
AM-BH29 0.75-1,	AM-BH29 1-1.25,	**07-Oct-2016**	**03-Nov-2016**	07-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH29 2.5-2.75								
80* dried soil (EA033)								
AM-BH32 0-0.25,	AM-BH32 1-1.25,	**10-Oct-2016**	**03-Nov-2016**	10-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
AM-BH32 2-2.25								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity								
80* dried soil (EA033) AM-BH26 0-0.25, AM-BH26 2-2.25, AM-BH18 1.25-1.5, AM-BH24 0.75-1, AM-BH24 2.25-2.5, AM-BH10 1.5-1.75,	AM-BH26 1.75-2, AM-BH18 0.75-1, AM-BH18 2-2.25, AM-BH24 1.5-1.75, AM-BH10 0-0.25, AM-BH10 2.5-2.75	**06-Oct-2016**	**03-Nov-2016**	06-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH29 0.75-1, AM-BH29 2.5-2.75	AM-BH29 1-1.25,	**07-Oct-2016**	**03-Nov-2016**	07-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH32 0-0.25, AM-BH32 2-2.25	AM-BH32 1-1.25,	**10-Oct-2016**	**03-Nov-2016**	10-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
EA033-D: Retained Acidity								
80* dried soil (EA033) AM-BH26 0-0.25, AM-BH26 2-2.25, AM-BH18 1.25-1.5, AM-BH24 0.75-1, AM-BH24 2.25-2.5, AM-BH10 1.5-1.75,	AM-BH26 1.75-2, AM-BH18 0.75-1, AM-BH18 2-2.25, AM-BH24 1.5-1.75, AM-BH10 0-0.25, AM-BH10 2.5-2.75	**06-Oct-2016**	**03-Nov-2016**	06-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH29 0.75-1, AM-BH29 2.5-2.75	AM-BH29 1-1.25,	**07-Oct-2016**	**03-Nov-2016**	07-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH32 0-0.25, AM-BH32 2-2.25	AM-BH32 1-1.25,	**10-Oct-2016**	**03-Nov-2016**	10-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
EA033-E: Acid Base Accounting								
80* dried soil (EA033) AM-BH26 0-0.25, AM-BH26 2-2.25, AM-BH18 1.25-1.5, AM-BH24 0.75-1, AM-BH24 2.25-2.5, AM-BH10 1.5-1.75,	AM-BH26 1.75-2, AM-BH18 0.75-1, AM-BH18 2-2.25, AM-BH24 1.5-1.75, AM-BH10 0-0.25, AM-BH10 2.5-2.75	**06-Oct-2016**	**03-Nov-2016**	06-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH29 0.75-1, AM-BH29 2.5-2.75	AM-BH29 1-1.25,	**07-Oct-2016**	**03-Nov-2016**	07-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓
80* dried soil (EA033) AM-BH32 0-0.25, AM-BH32 2-2.25	AM-BH32 1-1.25,	**10-Oct-2016**	**03-Nov-2016**	10-Oct-2017	✓	**03-Nov-2016**	01-Feb-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre:	scurti@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Golder Associates
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:
REBATCH OF EB1624749

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	Chromium Suite
AM-BH13	1	1.25	soil	6/10/2016		bag		1	N	X
AM-BH13	1.75	2	soil	6/10/2016		bag		1	N	X
AM-BH13	2.5	2.75	soil	6/10/2016		bag		1	N	X
AM-BH14	0.75	1	soil	6/10/2016		bag		1	N	X
AM-BH14	1.5	1.75	soil	6/10/2016		bag		1	N	X
AM-BH14	2.25	2.5	soil	6/10/2016		bag		1	N	X
AM-BH15	0	0.25	soil	7/10/2016		bag		1	N	X
AM-BH15	1.75	2	soil	7/10/2016		bag		1	N	X
AM-BH15	2.5	2.75	soil	7/10/2016		bag		1	N	X
AM-BH16	0	0.25	soil	7/10/2016		bag		1	N	X
AM-BH16	0.5	0.75	soil	7/10/2016		bag		1	N	X
AM-BH16	2.5	2.75	soil	7/10/2016		bag		1	N	X
AM-BH25	0.25	0.5	soil	6/10/2016		bag		1	N	X
AM-BH25	1.5	1.75	soil	6/10/2016		bag		2	N	X
AM-BH25	2.25	2.5	soil	6/10/2016		bag		1	N	X
AM-BH30	0.25	0.5	soil	10/10/2016		bag+2jar		3	N	X
AM-BH30	1.5	1.75	soil	10/10/2016		bag		1	N	X
AM-BH30	2.25	2.5	soil	10/10/2016		bag		1	N	X
AM-BH31	0.5	0.75	soil	10/10/2016		bag		1	N	X
AM-BH31	1.25	1.5	soil	10/10/2016		bag		1	N	X
AM-BH31	2.75	3	soil	10/10/2016		bag+jar		2	N	X

Environmental Division
Brisbane
Work Order Reference
EB1625888

Telephone : +61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Serena Curti	GOLDER	28/10/2016	4pm
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory LAB BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1625888**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 3
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 28-Oct-2016 3:00 PM	Issue Date	: 31-Oct-2016
Client Requested Due Date	: 04-Nov-2016	Scheduled Reporting Date	: **04-Nov-2016**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: AMBIENT
Receipt Detail	: REBATCH	No. of samples received / analysed	: 21 / 21

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **The samples in this work order have been re-batched from EB1624749.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EA033 Chromium Suite for Acid Sulphate Soils
EB1625888-001	[06-Oct-2016]	AM-BH13 1-1.25	✓
EB1625888-002	[06-Oct-2016]	AM-BH13 1.75-2	✓
EB1625888-003	[06-Oct-2016]	AM-BH13 2.5-2.75	✓
EB1625888-004	[06-Oct-2016]	AM-BH14 0.75-1	✓
EB1625888-005	[06-Oct-2016]	AM-BH14 1.5-1.75	✓
EB1625888-006	[06-Oct-2016]	AM-BH14 2.25-2.5	✓
EB1625888-007	[07-Oct-2016]	AM-BH15 0-0.25	✓
EB1625888-008	[07-Oct-2016]	AM-BH15 1.75-2	✓
EB1625888-009	[07-Oct-2016]	AM-BH15 2.5-2.75	✓
EB1625888-010	[07-Oct-2016]	AM-BH16 0-0.25	✓
EB1625888-011	[07-Oct-2016]	AM-BH16 0.5-0.75	✓
EB1625888-012	[07-Oct-2016]	AM-BH16 2.5-2.75	✓
EB1625888-013	[06-Oct-2016]	AM-BH25 0.25-0.5	✓
EB1625888-014	[06-Oct-2016]	AM-BH25 1.5-1.75	✓
EB1625888-015	[06-Oct-2016]	AM-BH25 2.25-2.5	✓
EB1625888-016	[10-Oct-2016]	AM-BH30 0.25-0.5	✓
EB1625888-017	[10-Oct-2016]	AM-BH30 1.5-1.75	✓
EB1625888-018	[10-Oct-2016]	AM-BH30 2.25-2.5	✓
EB1625888-019	[10-Oct-2016]	AM-BH31 0.5-0.75	✓
EB1625888-020	[10-Oct-2016]	AM-BH31 1.25-1.5	✓
EB1625888-021	[10-Oct-2016]	AM-BH31 2.75-3	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au

SERENA CURTI

- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1625888**	Page	: 1 of 7
Amendment	: **1**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016 15:00
Order number	: 1538021	Date Analysis Commenced	: 02-Nov-2016
C-O-C number	: ----	Issue Date	: 02-Nov-2016 16:46
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 21		
No. of samples analysed	: 21		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- **The samples in this work order have been re-batched from EB1624749.**
- Amendment (02/11/2016): This report has been amended and re-released to allow adjustment of the LCS amount added value for TAA. New LCS was used with old LCS amount added value, causing Standard to appear to fail. All analysis results are as per the previous report.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime ($CaCO_3$) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1-1.25	AM-BH13 1.75-2	AM-BH13 2.5-2.75	AM-BH14 0.75-1	AM-BH14 1.5-1.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625888-001	EB1625888-002	EB1625888-003	EB1625888-004	EB1625888-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.4	4.4	5.0	5.8	4.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	71	19	<2	52
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	0.11	0.03	<0.02	0.08
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.012	0.078	0.006	0.080	0.006
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	49	<10	50	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	0.05	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	0.06	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	<0.02	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	<10	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	<0.02	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.20	0.04	0.08	0.09
Net Acidity (acidity units)	----	10	mole H+ / t	<10	126	23	51	56
Liming Rate	----	1	kg CaCO3/t	<1	9	2	4	4
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	0.20	0.04	0.08	0.09
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	126	23	51	56
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	9	2	4	4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2.25-2.5	AM-BH15 0-0.25	AM-BH15 1.75-2	AM-BH15 2.5-2.75	AM-BH16 0-0.25
			Client sampling date / time	[06-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625888-006	EB1625888-007	EB1625888-008	EB1625888-009	EB1625888-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.1	5.8	6.0	6.1	8.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	2	12	4	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.005	0.036	<0.005	0.016	0.219
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	22	<10	10	136
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	----	10.6
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	----	2120
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	----	3.40
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.06	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	35	<10	11	<10
Liming Rate	----	1	kg CaCO3/t	<1	3	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	<0.02	0.06	<0.02	<0.02	0.22
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	<10	35	<10	11	136
Liming Rate excluding ANC	----	1	kg CaCO3/t	<1	3	<1	<1	10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 2.5-2.75	AM-BH25 0.25-0.5	AM-BH25 1.5-1.75	AM-BH25 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625888-011	EB1625888-012	EB1625888-013	EB1625888-014	EB1625888-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.5	8.4	7.9	8.4	6.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	62	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.10	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.008	0.358	0.013	0.078	<0.005
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	223	<10	49	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	1.35	3.57	3.32	0.38
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	270	713	664	76
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	0.43	1.14	1.06	0.12
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.11	0.07	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	66	43	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	5	3	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.11	0.36	<0.02	0.08	<0.02
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	66	223	<10	49	<10
Liming Rate excluding ANC	----	1	kg CaCO3/t	5	17	<1	4	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.25-0.5	AM-BH30 1.5-1.75	AM-BH30 2.25-2.5	AM-BH31 0.5-0.75	AM-BH31 1.25-1.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1625888-016	EB1625888-017	EB1625888-018	EB1625888-019	EB1625888-020
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.6	6.2	6.7	4.9	5.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	54	6	<2	39	22
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.09	<0.02	<0.02	0.06	0.04
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.010	0.333	1.17	0.057	1.15
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	208	727	36	716
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	1.37	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	274	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	0.44	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.10	0.34	0.87	0.12	1.18
Net Acidity (acidity units)	----	10	mole H+ / t	60	214	545	75	738
Liming Rate	----	1	kg CaCO3/t	4	16	41	6	55
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.10	0.34	1.17	0.12	1.18
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	60	214	727	75	738
Liming Rate excluding ANC	----	1	kg CaCO3/t	4	16	54	6	55

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 2.75-3	----	----	----	----
			Client sampling date / time	[10-Oct-2016]	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1625888-021	--------	--------	--------	--------
				Result	----	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.2	----	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	19	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	----	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	1.18	----	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	734	----	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	1.21	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	753	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	56	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	1.21	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	753	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	56	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1625888**	Page	: 1 of 4
Amendment	: **1**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 02-Nov-2016
C-O-C number	: ----	Issue Date	: 02-Nov-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 21		
No. of samples analysed	: 21		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 637227)									
EB1625884-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.03	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	20	19	5.49	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.3	5.3	0.00	0% - 20%
EB1625888-002	AM-BH13 1.75-2	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.11	0.11	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	71	68	4.70	0% - 20%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.4	4.4	0.00	0% - 20%
EA033-A: Actual Acidity (QC Lot: 637228)									
EB1625888-012	AM-BH16 2.5-2.75	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.4	8.5	1.18	0% - 20%
EA033-B: Potential Acidity (QC Lot: 637227)									
EB1625884-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.006	0.006	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit
EB1625888-002	AM-BH13 1.75-2	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.078	0.077	0.00	0% - 50%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	49	48	0.00	No Limit
EA033-B: Potential Acidity (QC Lot: 637228)									
EB1625888-012	AM-BH16 2.5-2.75	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.358	0.357	0.00	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	223	223	0.00	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 637228)									
EB1625888-012	AM-BH16 2.5-2.75	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.35	1.41	4.04	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EA033-C: Acid Neutralising Capacity (QC Lot: 637228) - continued									
EB1625888-012	AM-BH16 2.5-2.75	EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.43	0.45	4.04	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	270	282	4.04	0% - 20%
EA033-D: Retained Acidity (QC Lot: 637227)									
EB1625888-002	AM-BH13 1.75-2	EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	<0.02	0.00	No Limit
		EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.05	0.05	0.00	No Limit
		EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	0.06	0.06	0.00	No Limit
		EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	<10	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 637227)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.8 pH Unit	95.8	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	15 mole H+ / t	100	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-A: Actual Acidity (QCLot: 637228)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.8 pH Unit	95.8	70	130
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	15 mole H+ / t	102	70	130
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 637227)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.295 % S	82.9	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-B: Potential Acidity (QCLot: 637228)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.295 % S	91.5	70	130
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 637227)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	102	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 637228)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	10 % CaCO3	102	70	130
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-D: Retained Acidity (QCLot: 637227)								
EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	0.052 % S	85.1	70	130
EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	<0.02	0.026 % S	105	70	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1625888**	Page	: 1 of 6
Amendment	: **1**		
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 28-Oct-2016
Site	: Brisbane Airport	Issue Date	: 02-Nov-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 21
Order number	: 1538021	No. of samples analysed	: 21

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
80* dried soil (EA033)								
AM-BH13 1-1.25,	AM-BH13 1.75-2,	**06-Oct-2016**	**02-Nov-2016**	06-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH13 2.5-2.75,	AM-BH14 0.75-1,							
AM-BH14 1.5-1.75,	AM-BH14 2.25-2.5,							
AM-BH25 0.25-0.5,	AM-BH25 1.5-1.75,							
AM-BH25 2.25-2.5								
80* dried soil (EA033)								
AM-BH15 0-0.25,	AM-BH15 1.75-2,	**07-Oct-2016**	**02-Nov-2016**	07-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH15 2.5-2.75,	AM-BH16 0-0.25,							
AM-BH16 0.5-0.75,	AM-BH16 2.5-2.75							
80* dried soil (EA033)								
AM-BH30 0.25-0.5,	AM-BH30 1.5-1.75,	**10-Oct-2016**	**02-Nov-2016**	10-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH30 2.25-2.5,	AM-BH31 0.5-0.75,							
AM-BH31 1.25-1.5,	AM-BH31 2.75-3							
EA033-B: Potential Acidity								
80* dried soil (EA033)								
AM-BH13 1-1.25,	AM-BH13 1.75-2,	**06-Oct-2016**	**02-Nov-2016**	06-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH13 2.5-2.75,	AM-BH14 0.75-1,							
AM-BH14 1.5-1.75,	AM-BH14 2.25-2.5,							
AM-BH25 0.25-0.5,	AM-BH25 1.5-1.75,							
AM-BH25 2.25-2.5								
80* dried soil (EA033)								
AM-BH15 0-0.25,	AM-BH15 1.75-2,	**07-Oct-2016**	**02-Nov-2016**	07-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH15 2.5-2.75,	AM-BH16 0-0.25,							
AM-BH16 0.5-0.75,	AM-BH16 2.5-2.75							
80* dried soil (EA033)								
AM-BH30 0.25-0.5,	AM-BH30 1.5-1.75,	**10-Oct-2016**	**02-Nov-2016**	10-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH30 2.25-2.5,	AM-BH31 0.5-0.75,							
AM-BH31 1.25-1.5,	AM-BH31 2.75-3							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity								
80* dried soil (EA033)								
AM-BH13 1-1.25,	AM-BH13 1.75-2,	**06-Oct-2016**	**02-Nov-2016**	06-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH13 2.5-2.75,	AM-BH14 0.75-1,							
AM-BH14 1.5-1.75,	AM-BH14 2.25-2.5,							
AM-BH25 0.25-0.5,	AM-BH25 1.5-1.75,							
AM-BH25 2.25-2.5								
80* dried soil (EA033)								
AM-BH15 0-0.25,	AM-BH15 1.75-2,	**07-Oct-2016**	**02-Nov-2016**	07-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH15 2.5-2.75,	AM-BH16 0-0.25,							
AM-BH16 0.5-0.75,	AM-BH16 2.5-2.75							
80* dried soil (EA033)								
AM-BH30 0.25-0.5,	AM-BH30 1.5-1.75,	**10-Oct-2016**	**02-Nov-2016**	10-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH30 2.25-2.5,	AM-BH31 0.5-0.75,							
AM-BH31 1.25-1.5,	AM-BH31 2.75-3							
EA033-D: Retained Acidity								
80* dried soil (EA033)								
AM-BH13 1-1.25,	AM-BH13 1.75-2,	**06-Oct-2016**	**02-Nov-2016**	06-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH13 2.5-2.75,	AM-BH14 0.75-1,							
AM-BH14 1.5-1.75,	AM-BH14 2.25-2.5,							
AM-BH25 0.25-0.5,	AM-BH25 1.5-1.75,							
AM-BH25 2.25-2.5								
80* dried soil (EA033)								
AM-BH15 0-0.25,	AM-BH15 1.75-2,	**07-Oct-2016**	**02-Nov-2016**	07-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH15 2.5-2.75,	AM-BH16 0-0.25,							
AM-BH16 0.5-0.75,	AM-BH16 2.5-2.75							
80* dried soil (EA033)								
AM-BH30 0.25-0.5,	AM-BH30 1.5-1.75,	**10-Oct-2016**	**02-Nov-2016**	10-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH30 2.25-2.5,	AM-BH31 0.5-0.75,							
AM-BH31 1.25-1.5,	AM-BH31 2.75-3							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting								
80* dried soil (EA033)								
AM-BH13 1-1.25,	AM-BH13 1.75-2,	**06-Oct-2016**	**02-Nov-2016**	06-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH13 2.5-2.75,	AM-BH14 0.75-1,							
AM-BH14 1.5-1.75,	AM-BH14 2.25-2.5,							
AM-BH25 0.25-0.5,	AM-BH25 1.5-1.75,							
AM-BH25 2.25-2.5								
80* dried soil (EA033)								
AM-BH15 0-0.25,	AM-BH15 1.75-2,	**07-Oct-2016**	**02-Nov-2016**	07-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH15 2.5-2.75,	AM-BH16 0-0.25,							
AM-BH16 0.5-0.75,	AM-BH16 2.5-2.75							
80* dried soil (EA033)								
AM-BH30 0.25-0.5,	AM-BH30 1.5-1.75,	**10-Oct-2016**	**02-Nov-2016**	10-Oct-2017	✓	**02-Nov-2016**	31-Jan-2017	✓
AM-BH30 2.25-2.5,	AM-BH31 0.5-0.75,							
AM-BH31 1.25-1.5,	AM-BH31 2.75-3							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	3	30	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

CHAIN OF CUSTODY DOCUMENTATION - WATER

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS
Sampled By:	Morgan Midgley		
Turnaround (Days):	5 days	BY:	
Report Format:	Please provide data in ESDAT format		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton Qld 4064
Phone : (07) 3721 5400
Fax : (07) 3721 5401
Invoice to be sent to Accounts Aust: auaccountspayable@golder.com.au
Project Manager: K Biram
Contact Phone: 37215400
Email: scurti@golder.com.au

Comments/Special Instructions:

Copy results to: pscells@golder.com.au
scurti@golder.com.au

ANALYSIS REQUIRED

	SAMPLE ID	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	No.CONTAINERS	POSSIBLE HIGH CONCENTRATION	PFAS extended suite 28 - ultra trace levels	pH	Major Anions - Cl, So4, alkalinity	Electrical conductivity	Major Cations - Ca, Mg, K, Na	Acidity	W-2 8 metals	Dissolved Al + Fe
1	AM-BH08	Water	25-10-16	1206	Ice	2	N	X							
2	AM-BH19	Water	25-10-16	1054	Ice	2	N	X							
3	BIP-~~BAC~~-MW07	Water	25.10.16	12.32	Ice	2	N	X							
4	BIP-MW1	Water	25.10.16	13.33	Ice	2	N	X							
5	BIP-MW2	Water	25-10-16	13.15	Ice	2	N	X							
6	AM-~~CP11~~MW31	Water	25-10-16	1312	Ice	4	N	X	X	X	X	X	X	X	X
7	AM-MW14	Water	25-10-16	0940	Ice	4	N	X	X	X	X	X	X	X	X
8	AM-MW15	Water	25.10.16	10.32	Ice	4	N	X	X	X	X	X	X	X	X
9	AM-MW16	Water	25.10.16	9.07	Ice	4	N	X	X	X	X	X	X	X	X
10	AM-MW10	Water	25.10.16	11.27	Ice	4	N	X	X	X	X	X	X	X	X
11	QAQC100	Water	25.10.16	9.07	Ice	4	N	X						X	
12	QAQC300	Water	25.10.16	14.30	Ice	3	N	X						X	

HOLD ALL OTHER BOTTLES NOT SELECTED FOR ANALYSIS

Environmental Division
Brisbane
Work Order Reference
EB1625464

Telephone : +61-7-3243 7222

SAMPLE MATRIX =Water SAMPLE TYPE = Discrete(DC) POSSIBLE HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid Preserved Vial; BS = Sulphuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; O = Other

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	[signature]	GOLDER		
RECEIVED BY	[signature]	ALS	25/10/16	15:15
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref.
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		Chilled		LAB BATCH NUMBER	
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1625464**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 3
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 25-Oct-2016 3:15 PM	Issue Date	: 25-Oct-2016
Client Requested Due Date	: 01-Nov-2016	Scheduled Reporting Date	: **01-Nov-2016**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.4°C, 5.8°C - Ice present
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 12 / 12

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
QAQC300	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
QAQC300	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PC)	WATER - EA010P Conductivity (PC)	WATER - ED038 Default Acidity as CaCO3 only	WATER - EG020F Dissolved Metals by ICPMS	WATER - EP231X-LL PFAS - Full Suite Low Level (28 analytes)	WATER - NT-01 & 02 Ca, Mg, Na, K, Cl, SO4, Alkalinity	WATER - W-02 8 Metals
EB1625464-001	25-Oct-2016 12:06	AM-BH08					✓		
EB1625464-002	25-Oct-2016 10:54	AM-BH19					✓		
EB1625464-003	25-Oct-2016 12:32	BIP-MW07					✓		
EB1625464-004	25-Oct-2016 13:33	BIP-MW1					✓		
EB1625464-005	25-Oct-2016 14:15	BIP-MW2					✓		
EB1625464-006	25-Oct-2016 13:12	AM-MW31	✓	✓	✓	✓	✓	✓	✓
EB1625464-007	25-Oct-2016 09:40	AM-MW14	✓	✓	✓	✓	✓	✓	✓
EB1625464-008	25-Oct-2016 10:32	AM-MW15	✓	✓	✓	✓	✓	✓	✓
EB1625464-009	25-Oct-2016 09:07	AM-MW16	✓	✓	✓	✓	✓	✓	✓
EB1625464-010	25-Oct-2016 11:27	AM-MW10	✓	✓	✓	✓	✓	✓	✓
EB1625464-011	25-Oct-2016 09:07	QAQC100					✓		✓
EB1625464-012	25-Oct-2016 14:30	QAQC300					✓		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au
K BIRAM		
- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
PAUL SCELLS		
- *AU Certificate of Analysis - NATA (COA)	Email	pscells@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	pscells@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	pscells@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	pscells@golder.com.au
- Chain of Custody (CoC) (COC)	Email	pscells@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	pscells@golder.com.au
SERENA CURTI		
- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1625464**	Page	: 1 of 9
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 27-Oct-2016
C-O-C number	: ----	Issue Date	: 01-Nov-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA005P: pH by PC Titrator (QC Lot: 632975)									
EB1625473-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.75	6.90	2.20	0% - 20%
EB1625444-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.56	7.53	0.398	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 632976)									
EB1625444-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	431	431	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 632978)									
EB1625444-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	46	48	4.58	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	46	48	4.58	0% - 20%
ED038A: Acidity (QC Lot: 634475)									
EB1625246-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	6	6	0.00	No Limit
EB1625464-009	AM-MW16	ED038: Acidity as CaCO3	----	1	mg/L	388	400	3.08	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 630949)									
EB1625413-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	5620	5460	2.91	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 630948)									
EB1625413-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	2410	2510	4.32	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 631832)									
EB1625502-003	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	494	493	0.253	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	51	51	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	254	250	1.60	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	191	190	0.00	0% - 20%
EB1625464-006	AM-MW31	ED093F: Calcium	7440-70-2	1	mg/L	436	448	2.77	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	1010	1040	3.01	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	6800	6940	2.00	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 631832) - continued									
EB1625464-006	AM-MW31	ED093F: Potassium	7440-09-7	1	mg/L	238	244	2.52	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 631833)									
EB1625502-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0006	0.0006	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.023	0.024	0.00	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	1.31	1.25	4.96	0% - 20%
EB1625464-006	AM-MW31	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.024	0.024	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.118	0.123	3.52	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.10	0.08	14.9	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	12.2	12.6	3.41	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 631834)									
EB1625507-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0001	0.0001	0.00	No Limit
EB1625464-006	AM-MW31	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	2.61	2.51	4.02	0% - 20%
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	1.64	1.57	4.06	0% - 20%
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	7.91	7.58	4.36	0% - 20%
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	0.042	0.041	3.36	0% - 20%
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.347	0.393	12.5	0% - 20%
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 633504) - continued									
EB1625464-003	BIP-MW07	EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	0.042	0.034	18.9	0% - 20%
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	0.422	0.418	0.952	0% - 20%
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	0.009	0.007	26.8	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	0.025	0.022	15.3	0% - 50%
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.002	0.00	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 633504) - continued									
EB1625449-001	Anonymous	EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 632975)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98	102
				----	7 pH Unit	101	98	102
EA010P: Conductivity by PC Titrator (QCLot: 632976)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	4000 µS/cm	95.7	91	107
				<1	12890 µS/cm	96.0	91	107
ED037P: Alkalinity by PC Titrator (QCLot: 632978)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	106	80	120
ED038A: Acidity (QCLot: 634475)								
ED038: Acidity as CaCO3	----	----	mg/L	----	100 mg/L	104	90	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 630949)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	96.2	85	118
				<1	100 mg/L	93.0	85	118
ED045G: Chloride by Discrete Analyser (QCLot: 630948)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	96.2	90	115
				<1	1000 mg/L	106	90	115
ED093F: Dissolved Major Cations (QCLot: 631832)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
ED093F: Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
ED093F: Sodium	7440-23-5	1	mg/L	<1	----	----	----	----
ED093F: Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 631833)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	89.7	79	118
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.8	88	116
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	88	108
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.0	87	113
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.2 mg/L	96.0	88	114
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.2	89	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.9	89	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.2 mg/L	97.6	87	113
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	85.5	82	114
EG035F: Dissolved Mercury by FIMS (QCLot: 631834)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.9	84	118
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504) - continued								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.05 µg/L	103	60	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.05 µg/L	99.4	60	130
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.05 µg/L	120	60	130
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.05 µg/L	121	60	130
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.05 µg/L	115	60	130
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	0.05 µg/L	91.2	60	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.05 µg/L	101	60	130
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.05 µg/L	90.2	60	130
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.05 µg/L	104	60	130
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.05 µg/L	104	60	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.05 µg/L	90.2	60	130
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.05 µg/L	96.0	60	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.05 µg/L	115	60	130
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.05 µg/L	84.8	60	130
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.05 µg/L	85.0	60	130
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.05 µg/L	78.6	60	130
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.125 µg/L	71.0	60	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 633504)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.05 µg/L	120	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.125 µg/L	106	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.125 µg/L	83.0	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	0.125 µg/L	90.8	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.125 µg/L	76.4	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.05 µg/L	86.6	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.05 µg/L	117	60	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 633504)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.05 µg/L	97.8	60	130
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.05 µg/L	110	60	130
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.05 µg/L	81.2	60	130
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.05 µg/L	78.2	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 630949)							
EB1625451-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	# Not Determined	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 630948)							
EB1625451-001	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	89.9	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 631833)							
EB1625464-007	AM-MW14	EG020A-F: Aluminium	7429-90-5	0.5 mg/L	117	70	130
		EG020A-F: Arsenic	7440-38-2	0.1 mg/L	110	70	130
		EG020A-F: Cadmium	7440-43-9	0.1 mg/L	101	70	130
		EG020A-F: Chromium	7440-47-3	0.1 mg/L	90.5	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	86.0	70	130
		EG020A-F: Lead	7439-92-1	0.1 mg/L	110	70	130
		EG020A-F: Nickel	7440-02-0	0.1 mg/L	88.5	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	99.6	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 631834)							
EB1625464-007	AM-MW14	EG035F: Mercury	7439-97-6	0.01 mg/L	71.3	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.05 µg/L	94.0	50	130
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.05 µg/L	# Not Determined	60	130
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.05 µg/L	90.8	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	55.9	50	130
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.05 µg/L	71.0	50	130
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.05 µg/L	64.4	61	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.05 µg/L	69.4	60	130
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.05 µg/L	79.8	50	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.05 µg/L	96.0	65	130
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.05 µg/L	72.8	50	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504) - continued							
EB1625449-002	Anonymous	EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.05 µg/L	67.0	50	130
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.05 µg/L	60.4	30	130
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.125 µg/L	47.4	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.05 µg/L	103	50	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.125 µg/L	83.4	50	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.125 µg/L	70.5	50	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.125 µg/L	63.7	36	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.125 µg/L	60.0	30	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.05 µg/L	62.8	50	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.05 µg/L	64.0	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05 µg/L	84.4	50	130
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05 µg/L	69.8	60	130
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05 µg/L	76.2	60	130
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05 µg/L	60.2	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1625464**	Page	: 1 of 8
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016
Site	: Brisbane Airport	Issue Date	: 01-Nov-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 12
Order number	: 1538021	No. of samples analysed	: 12

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EB1625451--001	Anonymous	**Sulfate as SO4 - Turbidimetric**	14808-79-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluoropentane sulfonic acid (PFPeS)**	2706-91-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EB1625449--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
AM-MW31, AM-MW15, AM-MW10	AM-MW14, AM-MW16,	----	----	----	27-Oct-2016	25-Oct-2016	**2**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	25-Oct-2016	×
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	08-Nov-2016	✓
ED038A: Acidity							
Clear Plastic Bottle - Natural (ED038) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**28-Oct-2016**	08-Nov-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Natural (EG020A-F) QAQC300	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	23-Apr-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10, QAQC100	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	23-Apr-2017	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F)								
QAQC300		**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)								
AM-MW31,	AM-MW14,	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
AM-MW15,	AM-MW16,							
AM-MW10,	QAQC100							
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction followed by and LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1625464**	Page	: 1 of 12
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016 15:15
Order number	: 1538021	Date Analysis Commenced	: 27-Oct-2016
C-O-C number	: ----	Issue Date	: 01-Nov-2016 22:12
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020-F (Dissolved Metals): LOR's have been raised for some samples due to matrix interference.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	----	----	----	----	----
Total Cations	----	0.01	meq/L	----	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	**0.008**	**0.005**	<0.002	**0.008**	**0.002**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	**0.005**	**0.003**	<0.002	**0.004**	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.007**	**0.012**	<0.002	**0.011**	<0.002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	**0.004**	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	**0.002**	<0.002	<0.002	**0.006**	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.022**	**0.020**	<0.002	**0.033**	**0.002**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	**0.007**	**0.012**	<0.002	**0.011**	<0.002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**92.4**	**109**	**91.0**	**82.7**	**90.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.65	6.26	6.43	6.06	6.99
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	35300	20400	9120	14800	51400
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	341	362	185	95	297
Total Alkalinity as CaCO3	----	1	mg/L	341	362	185	95	297
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	242	570	218	388	260
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2620	2660	1140	1760	2400
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	13300	6920	2750	4900	20700
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	436	348	192	242	407
Magnesium	7439-95-4	1	mg/L	1010	649	265	335	1220
Sodium	7440-23-5	1	mg/L	6800	3500	1420	2460	10700
Potassium	7440-09-7	1	mg/L	238	54	39	63	375
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.10	0.08	<0.01	<0.01	<0.05
Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.005	0.001	0.004	<0.005
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	<0.0001	<0.0001	<0.0005
Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Copper	7440-50-8	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Nickel	7440-02-0	0.001	mg/L	0.024	0.074	0.018	0.032	0.018
Lead	7439-92-1	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Zinc	7440-66-6	0.005	mg/L	0.118	0.194	0.076	0.118	0.134
Iron	7439-89-6	0.05	mg/L	12.2	87.6	7.58	87.6	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	436	258	105	177	640
Total Cations	----	0.01	meq/L	407	224	94.2	148	596

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	**3.53**	**6.93**	**5.45**	**8.77**	**3.57**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	**0.171**	**0.011**	**0.037**	**0.006**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	**0.084**	**0.006**	**0.029**	**0.008**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	**0.394**	**0.054**	**0.293**	**0.062**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	**0.002**	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	**0.011**	<0.002	**0.021**	**0.004**
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	**0.004**	<0.002	**0.005**	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	**0.019**	<0.002	**0.023**	**0.003**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	**0.005**	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	**0.003**	<0.002	**0.016**	**0.004**
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	**0.686**	**0.071**	**0.431**	**0.087**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	<0.002	**0.405**	**0.054**	**0.314**	**0.066**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**87.2**	**89.4**	**86.8**	**102**	**87.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.004**	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.032**	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.120**	<0.005	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	----	----	----	----	----
Total Cations	----	0.01	meq/L	----	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	**0.036**	<0.002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	**0.029**	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.291**	<0.002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	**0.023**	<0.002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	**0.005**	<0.002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	**0.022**	<0.002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	**0.005**	<0.002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	**0.011**	<0.002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.422**	<0.002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	**0.314**	<0.002	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**82.4**	**94.5**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	120

APPENDIX C

Important Information Relating to This Report

IMPORTANT INFORMATION RELATING TO THIS REPORT

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Appendix E
Contaminated land investigations

8 December 2016

CONTAMINATION ASSESSMENT

Auto Mall Precinct Stage 1

Submitted to:
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REPORT

Report Number. 1538021-013-R-Rev1

Distribution:

1 Electronic Copy

Golder Associates

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1.0 INTRODUCTION

Brisbane Airport Corporation Pty Ltd (BAC) commissioned Golder Associates Pty Ltd (Golder) to undertake a contamination assessment for Stage 1 of the Auto Mall Precinct project at the Brisbane Airport (see Figure 1). Golder has previously conducted a desktop study contamination and Acid Sulfate Soil (ASS) review of the Auto Mall Precinct for BAC (reference 1460490-002-R-Rev0, February 2015). The purpose of the contamination assessment is to inform the detailed design of the proposed development.

Combined contamination, acid sulfate soil and geotechnical investigations were conducted during December 2015 based on the scope of work defined in our proposal (Golder document reference no. P1538021-002-L-Rev1 dated 12 October 2015). A supplementary investigation was completed in October 2016 from 3 locations, and was prompted by the absence of data in the central portion of Stage 1, due to the dense vegetation that prevented access during the December 2015 investigation.

This report presents the contamination assessment findings for Stage 1 of the Auto Mall Precinct. The assessment results from the geotechnical and acid sulfate soil (ASS) investigations are provided in separate reports.

2.0 PROJECT DETAILS

An Auto Mall Precinct is proposed to be developed on an area between Moreton Drive, Nancy Bird Way and Airport Drive at the Brisbane Airport. Refer attached **Figure 1** for the location plan. The proposed development comprises a test track in the middle of the site, surrounded by development lots for future commercial use. Private roads are located around the perimeter of the site. An Energex substation and easement is present on the site.

At the time of writing, we understand that the site is to be developed in three stages as follows:

- Development Stage 1: Track, roads and selected development lots; lots north of the Energex easement between the track and Moreton Drive, and the Track and Nancy Bird Way.
- Development Stage 2: development lots south of the Energex easement.
- Development Stage 3: development lots north of the Energex easement between the track and Airport Drive.

Drainage channels will run along site perimeter, with invert levels as low as of RL 0.2 m AD in the western portion of the site. Site drainage channels will discharge into nearby surface water drains

The current staging plan is provided in **Appendix A**.

However, for consistency with previous works, <u>we refer to the portion of the site north of the Energex easement as the Stage 1 investigation area, and the portion to the south as the Stage 2 investigation area</u>.

3.0 SITE DESCRIPTION

The site has an average surface RL of about 2.4 m AD[1] and is currently heavily vegetated with casuarina forest and mangroves. The Stage 1 investigation area of the development covers an area of approximately 950 m by 450 m.

Landers Pocket drain is the closet surface water body feature, located at least 100 m west of the project area. Surface water in Landers Pocket drain flows north-east and south-west before discharging into Kedron Brook Floodway Drain. The Kedron Brook Floodway Drain discharges into Kedron Brook. The ultimate receiving environment of surface water is Moreton Bay from Kedron Brook.

[1] Aerodrome Datum

4.0 BACKGROUND INFORMATION

Golder previously conducted a desktop assessment of ASS, groundwater and contamination for the Auto Mall Precinct in 2014. The findings of this desktop assessment were reported in Golder report reference No. 1416490-002-Rev0.

Relevant contamination findings for Stage 1 from the desktop assessment are summarised below:

- Brisbane Airport Corporation (BAC) maintains a Contaminated Sites Register (CSR). CSR listed site 28 (black sands) is located at the southern end of the Auto Mall Precinct within the Stage 2 investigation area, on the boundary with the Stage 1 investigation area. Potential contaminants of concern associated with the black sands include heavy metals, minerals and radioactivity.
- All remaining CSR listed sites were located outside of the Auto Mall Precinct area and were considered to have a low potential to cause impact to the current development site.
- In addition to the CSR, the desktop study completed for the Auto Mall Precinct in 2015 identified a construction yard in the southern portion of Stage 2 investigation area in 2009, likely associated with the works for the construction of Moreton Drive. This potential contamination source includes the possible contaminants of concern of hydrocarbons, heavy metals and organochlorine pesticides.

Per- and poly-fluoroaklyl substance (PFAS) are emerging contaminants of concern at airports and airfields. PFAS (including PFOS and PFOA) are associated with historical use in aqueous film forming foams (AFFF) used for firefighting. PFAS are persistent chemicals with high groundwater mobility. Known PFAS source areas at the Brisbane Airport include the fire rescue training facilities and fire stations, but PFAS have been widely detected in groundwater across the airport. The nearest potential sources of PFAS comprise:

- Satellite Fire Station located about 3.9 km north of the site.
- Fire Rescue Training Area located about 4.8 km north of the site.
- Main Fire Station located about 2.3 km north east of the site.

Since the desktop study was completed, fuel storage facilities were also identified as potential PFAS sources, due to the storage of large volumes of firefighting liquids. The closest fuel facilities to the site include:

- JUHI facility along Hakea Street, located about 780 m north-east of the site
- Former JUHI facility along Lomandra Drive, located about 1.3 km south of the site.

The desktop assessment indicated that no previous groundwater investigations for PFAS have been conducted on the site or surrounding area.

As the use of PFOS and PFOA has been discontinued in AFFF, existing groundwater contamination from these source areas or incidental use elsewhere at the airport is not expected to increase over time.

No known or potential PFAS contaminating activities were identified occurring (presently or in the past) on or in the immediate vicinity of the site. However, PFAS has been widely detected in groundwater across the airport and therefore the need for a Preliminary Investigation (under GEM-02) is considered to be triggered at this site.

Based on the desktop assessment the main contaminants of interest (COI) for the investigation site comprise:

- PFAS, including PFOS and PFOA, in soil and groundwater associated with historical use in AFFF used for firefighting elsewhere at the airport.
- Heavy metals, mineral and radioactivity associated with the CSR site 28 (located within Stage 2 investigation area near the boundary of Stage 1)
- Hydrocarbons, heavy metals and organochlorine pesticides in soil associated with the former constructions yard (located within Stage 2 Investigation area).

5.0 REGULATORY FRAMEWORK

The following key regulatory drivers and guidance documents have been considered and utilised in conducting this assessment:

5.1 General

- Office of Legislative Drafting Attorney-General's Department, *Airports (Environment Protection) Regulations 1997* (AEPR 1997 guidelines).
- *Queensland Water Quality Guidelines* 2009, as amended in 2013 (QWQG 2009), which provides an overarching framework for the management of waters (including groundwater) under the Environmental Protection Act 1994.
- Provisions for the assessment and management of contaminated land under the *Environmental Protection Act 1994*
- ASC *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended in 2013 (NEPM 2013). The NEPM has been recognised as the primary national guidance document for the assessment of site contamination in Australia.

5.2 Per- and Poly-fluoroalkyl Substances (PFAS)

- Australian Government Department of Infrastructure and Regional Development *Guideline for Environmental Management – PFC Management Actions Advice* (GEM-002), Version June 2015.
- *Managing PFC Contamination at Airports Interim Contamination Management Strategy and Decision Framework*, GHD, June 2015.
- *Model Operating Conditions – ERA 60 – Waste Disposal* Version 1.1, Qld EHP, 30 January 2015.
- Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, *enHealth Statement: Interim national guidance on human health reference values for per- and poly-fluoroalkyl substances for use in site investigations in Australia,* June 2016.

6.0 ASSESSMENT CRITERIA

6.1 PFAS

Current Australian guidelines, including AEPR 1997, do not include screening or acceptable levels for PFAS. GEM-002 indicates that until national standards for the management of PFAS contamination are agreed, the framework for PFAS management developed by consultancy firm GHD (2015) - *Managing PFC Contamination at Airports Interim Contamination Management Strategy and Decision Framework* - is available to airports and is intended to facilitate discussion on *PFAS* management at leased federal airports.

The following Interim Screening Levels (from GHD 2015) for PFAS in soil, groundwater and surface water have been adopted as Tier 1 values for the initial assessment of risk.

Table 1: Interim Screening Levels for PFAS

Exposure Scenario	PFOS / PHFxS	PFOA / 8:2FTS	6:2FTS	Comment
Soil				
Human health (direct contact – offsite/soil reuse)	6 mg/kg	16 mg/kg	60 mg/kg	These are residential screening levels that are protective of human health via direct contact (ingestion, dermal and dust inhalation). These levels are conservative for consideration of construction workers and general public in the airport (commercial/industrial) setting.
Human health (direct contact – onsite/construction workers)	90 mg/kg	240 mg/kg	900 mg/kg	These interim screening levels are suitable for commercial/industrial land use settings. They are protective of adult worker and the general public health via direct contact (ingestion, dermal and dust inhalation). These levels do not consider the potential for leaching to groundwater.
Ecological (terrestrial)	0.373 mg/kg	3.73 mg/kg	n/a	Screening level is a low reliability, predicted no effect concentration and should provide 95% protection of terrestrial species.
Groundwater				
Human health (drinking water only)	0.2 µg/L	0.4 µg/L	5.0 µg/L	Based on a drinking water endpoint protective of human health and do not include allowance for other exposures or effects that might arise from use or disposal of water after use.
Ecological	In most cases the assessment of ecological impact will relate to the discharge of groundwater to a nearby surface water body, and impact on the aquatic ecosystem of the surface water. In assessing risk to surface waters, consideration should be given to the flux of the chemical in groundwater and the resulting dilution that will occur in the surface water. This can then be compared to the surface water screening values.			
Surface Water				
Ecological (toxicity effects on aquatic organisms)	6.66 µg/L	2,900 µg/L	n/a	95% species protection
Human Health (consumption of fish)	0.00065 µg/L*	0.3µg/L	0.0065 µg/L	Based on consumption of fish and applies to the receiving water **after** dilution.

*It is noted that this concentration is factor of 3 times lower than the limit of reporting (LOR) available at commercial analytical laboratories in Australia, using Ultratrace® methods. The concentration is also below the reported treatment levels using current technology/methods for saline waters. On this basis, the level of dilution that may be achieved prior to discharge into waterways becomes the critical factor rather than comparison to this interim screening level.

Additionally, the Queensland government has published maximum *PFAS* soil concentrations for use as day cover at landfills *(Model Operating Conditions – ERA 60 – Waste Disposal* Version 1.1, Qld EHP, 30 January 2015). These have been adopted to assess, suitability of PFAS-impacted soil to be disposed of offsite.

Further guidance on acceptable PFAS levels was recently provided in *enHealth Statement: Interim national guidance on human health reference values for per- and poly-fluoroalkyl substances for use in site investigations in Australia,* prepared by the Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee in June 2016.

The enHealth guidelines were also adopted as Tier 1 values for the initial assessment of risk for drinking water and surface water (recreational) exposure pathways.

Exposure Scenario	PFOS / PFHxS	PFOA	Comment
Groundwater			
Human health (drinking water)	0.5 µg/L	5 µg/L	The interim drinking water guideline values are not intended to be a guide for drinking water utility providers across Australia, but rather for use to confirm the quality of drinking water supplies potentially affected by specific instances of site contamination.
Surface Water			
Human Health (recreational)	5 µg/L	50 µg/L	Ten times the drinking water levels

6.2 Other Parameters

Airports (Environmental Protection) Regulations 1997 (AEPR – 1997) apply for airports in Australia and to all BAC land. The site is not listed as an Area of Environmental Significance at Brisbane Airport, as such results were compared with:

- Soil: Acceptable Limits for general areas (Schedule 3, Table 1 of AEPR).
- Groundwater: Accepted limits for marine Water (Schedule 2, Table 1 of AEPR).

In addition, the following guidelines derived from the *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013* (No. 1) (NEPM, 2013) Schedule B1 were also referenced as a general environmental screening tool for soil and groundwater:

- Soil: Ecological Screening Levels (ESLs) for commercial/industrial land use (coarse soil) for petroleum hydrocarbon compounds.
- Soil and groundwater: Human health exposure via vapour intrusion from volatile hydrocarbon impacts in soil (Hydrocarbon Screening Levels – HSLs). HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation pathway. The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures. They apply to different soil types, and depths below surface to greater than 8 m. For the program of works, the analytical data has been initially screened against the most conservative investigation level arising from the sand soil category.
- Soil: Health investigation Levels (HILs) for commercial/industrial land use for non-hydrocarbons.
- Soil: Ecological investigation levels (EILs) for commercial/industrial land use for non-hydrocarbons.
- Groundwater: Groundwater Investigation Levels (GILs) for marine waters, as the marine environment is the ultimate ecological receptor for groundwater.

7.0 FIELDWORK

7.1 Soil Investigation

Details of the soil investigation methodology for the contamination assessment are summarised in **Table 2** below.

Table 2: Field Activities - Drilling and Soil Sampling

Activity	Details
Drilling	Soil sampling for the original contamination assessment was conducted from 16 to 18 December 2015 and the supplementary investigation was conducted on 10 October 2016. Locations targeting potentiating contaminating activities are as follows: ■ Broad scale site coverage for residues associated with historical use of AFFF at the airport: AM-BH1 to AM-BH9, AM-BH17, AM-BH19 and AM-BH28, AM-BH30 to AM-BH32. ■ CSR Site 28 (black sands): AM-20 to AM-23 (some of these investigations locations are within the Stage 2 investigation area, but are included in this report for clarity). The boreholes were advanced to depths of 3 m using hollow flight augers or push tube technology, mounted on a light tracked vehicle. Borehole locations are presented in **Figure 1**. Borehole drilling was carried out under the supervision of a geotechnical engineer from Golder. Soil descriptions for the lithology encountered during drilling are presented as borehole logs in **Appendix B**.
Borehole Survey	Upon completion of intrusive investigations selected locations were surveyed by MPA Surveyors using differential GPS for easting, northing and RL. Remaining locations and levels were inferred from the survey plan provided by BAC (received 24 November 2015).
Soil Sampling	Soil samples for contamination assessment purposes were collected at 0.5 m intervals to 3 m bgl.
Decontamination Procedure	Samples were collected using disposable nitrile gloves and a decontaminated hand trowel. Non-dedicated soil sampling equipment was decontaminated using de-ionised water and rinsed with potable water between sampling locations.
Soil Screening	Collected soil samples were screened in the field using a photo-ionisation detector (PID) for the potential presence of volatile compounds.
Samples Preservation and Handling	Collected soil samples were placed in laboratory supplied containers. Sample containers were placed with ice, in eskies whilst on-site and in transit to the laboratory. All primary and duplicate samples were sent to Australian Laboratory Services (ALS) of Brisbane under Chain of Custody (CoC) procedures. Triplicate samples were sent to Eurofins of Brisbane under COC procedures. Laboratory documents are presented in **Appendix C**.
QA/QC	Quality Assurance/ Quality Control (QA/QC) programs were implemented for the original and supplementary investigations, and included the collection of duplicates and triplicates every 20 primary samples. No rinsate samples were collected.
Soil Analysis	Selected soil samples were analysed for the potential contaminants of concern identified in the desktop review, including: ▪ PFAS, extended suite. ▪ Total recoverable hydrocarbons (TRH) (with silica gel clean up) ▪ Benzene, toluene, ethylbenzene and xylenes (BTEX) ▪ Polycyclic aromatic hydrocarbons (PAH) ▪ Arsenic, cadmium, chromium, copper, lead, nickel, zinc and mercury (Heavy Metals) ▪ Organochlorine pesticides (OCP). Laboratory analytical reports are presented **Appendix C.**

7.1 Groundwater Investigation

Details of groundwater investigation methodology are summarised in Table 3 below.

Table 3: Field Activities - Groundwater Well Installation and Sampling

Activity	Details
Monitoring Well Installation and Construction	Five boreholes (AM-BH01, AM-BH04, AM-BH08, AM-BH19 and AM-BH28) from the December 2015 investigation and one borehole (AM-BH31) from the October 2016 investigation were converted into groundwater monitoring wells. **Figure 1** presents these new monitoring well locations and pre-existing historical monitoring wells (BIP/MW1, BIP/MW2, BIP/MW6, BAC-MW07 and BAC-MW-24). New monitoring wells were constructed using 50 mm, Class 18 PVC threaded screen and casing. Construction details for monitoring wells are presented on borehole reports in **Appendix B**.
Well Development	Following installation the new wells were developed using dedicated disposable bailers.
Well Gauging	Standing water levels (SWLs) were measured on 4 January 2016 and on 25 October 2016, using a water level meter. Groundwater gauging data are presented in Section 8.2, Table 4 and Table 6.
Well Purging and Sampling	On 4 January 2016, the wells were purged and sampled using dedicated disposable bailers. On 25 October 2016 purging and sampling was completed using a low flow peristaltic pump, equipped with disposable tubing. Groundwater quality parameters and visual observations were recorded during purging. Purging continued until three well volumes were removed or to stabilisation of quality parameters.
Sample Preservation and Handling	Collected water samples were placed in laboratory supplied containers. Samples were placed with ice, in eskies whilst on-site and in transit to the laboratory. All samples were sent to ALS of Brisbane under CoC procedures. Triplicate samples were sent to Eurofins of Brisbane under COC procedures. Laboratory documents are presented in **Appendix C**.
QA/QC Samples	A QA/QC program was implemented for the contamination investigation which included the collection of duplicates and triplicates every 20 primary samples. No rinsate samples were collected.
Groundwater Analysis	The groundwater samples from all wells were analysed for PFAS, extended suite using ultra trace methods. Groundwater samples collected in the October 2016 monitoring round were analysed for PFAS and heavy metals. Laboratory analytical reports are presented in **Appendix C**.

8.0 INVESTIGATION FINDINGS

8.1 Sub-surface Conditions

Detailed information of subsurface conditions encountered at the site are described in Report of Boreholes (**Appendix B**).

A summary of typical subsurface conditions encountered is as follows:

- **Crust** – A desiccated layer generally comprising loose silty sand and sandy clay generally between 0.1 to 0.3 m bgl, over
- **Recent Alluvium (Holocene)** – Compressible, inter-bedded sandy clays and clayey sands (Upper Holocene) from approximately 0 to 3 m bgl (target depth).

The PID readings are considered to be indicative of background conditions. No odours or staining were noted that may indicate potential contamination.

8.2 Groundwater Levels and Quality

January 2016 Monitoring Event

Groundwater level readings were recorded during a site visit on 4 January 2016 in new and existing groundwater monitoring wells. **Table 4** summarises the groundwater measurements for the current investigation. It should be noted that BAC has not provided Golder with construction details and data of wells BAC-MW07 and BAC-MW24. Golder has assigned the respective identification to these monitoring wells for the purpose of this report only. Based on the measured groundwater levels, the general flow direction beneath the site is interpreted to be towards the west.

Table 4: Summary of Groundwater Level Observations – January 2016

Well ID	Depth to Groundwater (m bgl)	Groundwater RL (m AD)	Date and Time of Observations
AM-BH01	0.93	2.06	04/01/2016 AT 12:00 PM
AM-BH04	1.41	1.26	04/01/2015 AT 12.36 PM
AM-BH08	1.13	1.75	04/01/2016 AT 12:50 PM
AM-BH19	0.71	1.91	04/01/2016 AT 1:05 PM
AM-BH28	0.76	1.98	04/01/2016 AT 12:20 PM
BIP/MW1	1.27	1.53	04/01/2016 AT 12.36 PM
BIP/MW2	1.07	1.91	04/01/2016 AT 11:00 AM
BP/MW6	1.02	2.01	04/01/2016 AT 11:30 AM
BAC-MW07	1.24	1.66	04/01/2016 AT 1:32 PM
BAC-MW24	0.81	2.13	04/01/2016 AT 10:30 AM

Field measurements of groundwater quality parameters are summarised in **Table 5**.

Table 5: Summary of Groundwater Quality Parameters – January 2016

Well ID	pH	Conductivity (mS/cm)	Redox (mV)	Dissolved Oxygen (%)	Temperature (ºC)
AM-BH01	5.74	34.6	33.2	49.1	22
AM-BH04	6.06	24.0	-16	36	22.2
AM-BH08	5.69	23.7	39.6	47.6	23.3
AM-BH19	5.68	32.5	40.1	44.5	22.9
AM-BH28	6.06	39.9	18	39	22.5
BIP/MW1	4.30	22.0	150.6	53.3	23.2
BIP/MW2	6.50	43.1	-91.4	15.8	23.3
BPI/MW6	6.86	42.8	-88.7	33	24.1
BAC-MW07	6.6	36.8	-81.5	46.2	22.7
BAC-MW24	6.85	50.6	-101.7	47.1	27.8

October 2016 Monitoring Event

Groundwater level readings were recorded during the groundwater monitoring event completed on 25 October 2016 from a selection of 3 new wells and 2 pre-existing groundwater monitoring wells. **Table 6** summarises the groundwater measurements for the current investigation. Based on the measured groundwater levels in the limited selection of wells, the general flow direction beneath the site is interpreted to be towards the south west.

Table 6: Summary of Groundwater Level Observations – October 2016

Well ID	Depth to Groundwater (m bTOC)	Groundwater RL (m AD)	Date and Time of Observations
AM-BH08	1.75	1.76	25/10/2016 at 11.20am
AM-BH19	1.32	1.86	25/10/2016 at 10.20am
AM-BH31/MW31	1.69	1.71	25/10/2016 at 12.40pm
BIP/MW1	1.33	1.87	25/10/2016 at 01.00pm
BIP/MW2	1.29	1.85	25/10/2016 at 01.50pm

In comparison with January 2016, groundwater RL is unchanged in the wells by more than 0.05 m, with the exception of BIP/MW1, where groundwater RL is measured 0.34 m higher.

Field measurements of groundwater quality parameters are summarised in **Table 7**.

Table 7: Summary of Groundwater Quality Parameters – October 2016

Well ID	pH	Conductivity (mS/cm)	Redox (mV)	Dissolved Oxygen (mg/L)	Temperature (ºC)
AM-BH08	6.71	25.7	-19	0.80	22.6
AM-BH19	6.60	32.3	-323	0.62	20.4
AM-BH31/MW31	6.20	31.1	-171	1.39	20.7
BIP/MW1	3.65	20.0	227	1.83	21.5
BIP/MW2	6.74	42.3	-149	0.91	22.7

In comparison with January 2016, the following variations in groundwater quality are observed:

- pH has increased in the wells monitored, except BIP/MW1, where a decrease from 4.30 to 3.65 has occurred.
- electrical conductivity (and salinity) is generally unchanged, all wells fall in the brackish range
- redox conditions have moved from oxidising to reducing in wells AM-BH08 and AM-BH19, while oxidising conditions in BIP/MW1 and reducing conditions in BIP/MW2 are confirmed
- dissolved oxygen level appear to have significantly decreased.

8.3 Quality Assurance and Quality Control

8.3.1.1 Field QA/QC

Sampling equipment utilised during the field investigation did not contain Teflon® to prevent false positive results for PFAS.

Soil and groundwater samples analysed for PFAS were placed into laboratory-issued bottles specifically for the analysis of PFAS, and therefore free of any Teflon® liners.

In January 2016, two soil duplicates and two triplicate soil samples were submitted for analysis. Analysis of one soil field duplicate was not conducted as a result of an error on the Chain of Custody/Test Request form. Whilst this resulted in a QC frequency for field duplicates of less than data objectives, it is not considered to impact on the overall quality of the investigation as all QA/QC results returned *PFAS* concentrations below the laboratory limit of reporting.

One groundwater duplicate and one triplicate were also analysed during this investigation.

No QA/QC samples were collected during October 2016 investigation (as this was combined with the investigation for Stage 2 area, and all the QA/QC samples collected are discussed in the Stage 2 investigation area report).

8.3.1.2 Data Validation

The validity of analytical data was assessed by critical review of the QA/QC sample results. This was performed in accordance with USEPA guidelines as presented in the document *National Functional Guidelines for Superfund Organic Methods Data Review*, June 2008 (USEPA, 2008).

Accuracy and precision measurements from the appropriate QA/QC check samples were compared to assess the quality of the analytical data. The primary objective of the data validation process was to ensure that the data reported are suitable to be used to achieve the investigation objectives.

On the basis of the outcome of the validation procedures employed, the overall quality of the analytical data is considered to be of an acceptable standard for interpretive use. The following are noted:

- All samples were received under the appropriate COC documentation by the primary laboratory in appropriately preserved containers. A holding time breach was report for pH on a groundwater sample. Field pH measurement was utilised instead of this result. No holding time breaches were reported.
- A review of internal QA/QC checks indicates general compliance for internal laboratory duplicates, surrogates and method blanks. Minor non-conformances detected in matrix spikes (chromium and zinc) and laboratory control spikes (hexachlorobenzene) are not considered to limit the use of the laboratory results.
- Soil duplicate and triplicate samples yielded acceptable repeatability for PFAS.
- Groundwater duplicate and triplicate samples yielded acceptable repeatability for PFAS.

A data validation sheet has been completed and presented in **Appendix D**. Based on the above, we consider the laboratory test results to be representative and valid for the purposes of the investigation.

8.4 Soil Analysis

Laboratory test results for soil samples of PFAS results are summarised in Table 8. Table 9 is a summary of the soil sample results for heavy metals, TRH, BTEX, PAH and OCP.

The laboratory results on soil samples indicated:

- Concentrations of PFAS were below the laboratory detection limit and the adopted initial screening criteria for human health and ecological (terrestrial) assessment in all samples collected in the December 2015 investigation; with reference to the 2016 investigation, detection of PFAS are reported in shallow soil collected at AM-MW31 (PFTeDA reported at 0.0005 mg/kg, corresponding to the laboratory limit of reporting) and at AM-BH32 in saturated soil (PFOS reported at 0.0002 mg/kg, corresponding to the laboratory limit of reporting).
- Concentrations of heavy metals, TRH, BTEX, PAH and OCP were below the adopted guidelines for human health and environment assessment.

These results indicate that the presence of PFAS, heavy metals, TRH, BTEX, PAH and OCP contamination is at low levels, below the selected screening levels in the soils from this area. Where disturbed, these soils should be suitable for reuse at other locations at the airport or may be suitable for offsite reuse (subject to more detailed PFAS sampling of excavated materials).

Table 8: Soil Laboratory Results Summary for PFAS

ChemName	output unit	EQL (Dec-15)	EQL (Oct-16)	Interim Screening Levels - Human health - industrial (direct contact only)1	Interim Screening Levels - Ecological (terrestrial, commercial/ industrial 60% protection, low reliability) 1	Maximum total concentration level in soil used as cover material of a operating QLD landfill (mg/kg)2															
						Field_ID	AM-BH01	AM-BH01	AM-BH02	AM-BH02	AM-BH03	AM-BH03	AM-BH04	AM-BH04	AM-BH05	AM-BH05	AM-BH06	AM-BH06	AM-BH07	AM-BH07	AM-BH08
						Sampled_Date	16/12/2015	16/12/2015	16/12/2015	16/12/2015	16/12/2015	16/12/2015	16/12/2015	16/12/2015	16/12/2015	16/12/2015	16/12/2015	16/12/2015	16/12/2015	16/12/2015	16/12/2015
						Sample_Depth_Range	0.00-0.50	2.50-3.00	0.00-0.50	1.00-1.50	0.00-0.50	1.00-1.50	0.00-0.50	0.50-1.00	0.50-1.00	2.50-3.00	0.50-1.00	2.50-3.00	0.00-0.50	1.50-2.00	0.00-0.50
						Lab_Report_Number	EB1538408	EB1538408	EB1538408	EB1538408	EB1538408	EB1538408	EB1538408	EB1538408	EB1538415	EB1538415	EB1538415	EB1538415	EB1538415	EB1538415	EB1538415
N-Et-FOSA	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
N-Et-FOSE	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
N-Me-FOSA	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
N-Me-FOSE	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFDcS	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanesulfonic acid (PFHxS)	mg/kg	0.0002	0.0002	90	0.373	6	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutanesulfonic acid (PFBS)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanesulfonamide (PFOSA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0005	0.0002	90	0.373	6	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
PFHxS+PFOS[4]	mg/kg	-	0.0002	90	0.373	6	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of detected related products[3] + PFOS	mg/kg	-	-	90	0.373	6	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
8:2 Fluorotelomer sulfonate (8:2 FtS)	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.005	0.0005	900		60	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluoroheptane sulfonic acid (PFOA)	mg/kg	0.0005	0.0002	240	3.73	16	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Sum of detected related products[3] + PFOA	mg/kg	0.0005	0.0005	240	3.73	16	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid	mg/kg	-	0.0005				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:2 Fluorotelomer sulfonic acid	mg/kg	-	0.0005				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoro-n-pentanoic acid (PFPeA)	mg/kg	-	0.0002				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorobutanoic acid (PFBA)	mg/kg	-	0.0002				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	-	0.001				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-methyl-perfluorooctanesulfonamidoacetic acid (MeFOSAA)	mg/kg	-	0.0002				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-ethyl-perfluorooctanesulfonamidoacetic acid (EtFOSAA)	mg/kg	-	0.0002				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PFAS (Sum of total - Lab Reported)	mg/kg	-	0.0002				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

All concentrations are expressed in mg/kg unless indicated otherwise
"<" Denotes below detection limit and is in grey font.
"-" Denotes analysis not requested for this sample
1. Airservices Australia, Managing PFC Contamination at Airports, Interim Contamination Management Strategy and Decision Framework, GHD, June 2015.
2. Model operating conditions, ERA 60 - Waste disposal Version 1, 2015, Department of Environment and Heritage Protection, Queensland Government.
3. Related products are suspected or may transform or degrade to PFOS or PFOA.
4. As per indication in Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, enHealth Statement: Interim national guidance on human health reference values for per- and poly-fluoroalkyl substances for use in site investigations in Australia, June 2016

Table 8 (continued): Soil Laboratory Results Summary for PFAS

						Field_ID	AM-BH08	AM-BH09	AM-BH09	AM-BH17	AM-BH17	AM-BH19	AM-BH19	AM-BH28	AM-BH28	AM-BH30	AM-BH30	AM-BH31	AM-BH31	AM-BH32	AM-BH32
						Sampled_Date	16/12/2015	17/12/2015	17/12/2015	18/12/2015	18/12/2015	17/12/2015	17/12/2015	18/12/2015	18/12/2015	10/10/2016	10/10/2016	10/10/2016	10/10/2016	10/10/2016	10/10/2016
						Sample_Depth_Range	1.00-1.50	0.00-0.50	0.50-1.00	0.00-0.50	1.00-1.50	0.00-0.50	1.50-2.00	0.00-0.50	2.50-3.00	0.25-0.5	0.75-1	0.25-0.5	1.75-2	0.25-0.5	2.75-3
						Lab_Report_Number	EB1538415	EB1538419	EB1538419	EB1538419	EB1538419	EB1538419	EB1538419	EB1538419	EB1538419	EB1624749	EB1624749	EB1624749	EB1624749	EB1624693	EB1624693
ChemName	**output unit**	**EQL (Dec-15)**	**EQL (Oct-16)**	Interim Screening Levels - Human health - industrial (direct contact only)1	Interim Screening Levels - Ecological (terrestrial, commercial/ industrial 60% protection, low reliability) 1	Maximum total concentration level in soil used as cover material of a operating QLD landfill (mg/kg)2															
N-Et-FOSA	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Et-FOSE	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Me-FOSA	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Me-FOSE	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
PFDcS	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanesulfonic acid (PFHxS)	mg/kg	0.0002	0.0002	90	0.373	6	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutanesulfonic acid (PFBS)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanesulfonamide (PFOSA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0005	0.0002	90	0.373	6	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002
PFHxS+PFOS[4]	mg/kg	-	0.0002	90	0.373	6	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of detected related products[3] + PFOS	mg/kg	-	-	90	0.373	6	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0002
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnA)	mg/kg	0.0002	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
8:2 Fluorotelomer sulfonate (8:2 FtS)	mg/kg	0.001	0.0005				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.005	0.0005	900		60	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroheptane sulfonic acid (PFOA)	mg/kg	0.0005	0.0002	240	3.73	16	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of detected related products[3] + PFOA	mg/kg	0.0005	0.0005	240	3.73	16	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid	mg/kg	-	0.0005				-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
4:2 Fluorotelomer sulfonic acid	mg/kg	-	0.0005				-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoro-n-pentanoic acid (PFPeA)	mg/kg	-	0.0002				-	-	-	-	-	-	-	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorobutanoic acid (PFBA)	mg/kg	-	0.0002				-	-	-	-	-	-	-	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	-	0.001				-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
N-methyl-perfluorooctanesulfonamidoacetic acid (MeFOSAA)	mg/kg	-	0.0002				-	-	-	-	-	-	-	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-ethyl-perfluorooctanesulfonamidoacetic acid (EtFOSAA)	mg/kg	-	0.0002				-	-	-	-	-	-	-	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
PFAS (Sum of total - Lab Reported)	mg/kg	-	0.0002				-	-	-	-	-	-	-	-	-	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	0.0002

All concentrations are expressed in mg/kg unless indicated otherwise
"<" Denotes below detection limit and is in grey font.
"-" Denotes analysis not requested for this sample
1. Airservices Australia, Managing PFC Contamination at Airports, Interim Contamination Management Strategy and Decision Framework, GHD, June 2015.
2. Model operating conditions, ERA 60 - Waste disposal Version 1, 2015, Department of Environment and Heritage Protection, Queensland Government.
3. Related products are suspected or may transform or degrade to PFOS or PFOA.
4. As per indication in Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, enHealth Statement: Interim national guidance on human health reference values for per- and poly-fluoroalkyl substances for use in site investigations in Australia, June 2016

Table 9: Soil Laboratory Results Summary for Other Parameters

										Location_Code	AM-BH30	AM-BH31	AM-BH32
										Depth	0.25-0.5	0.25-0.5	0.25-0.5
										Sampled_Date_Time	10/10/2016	10/10/2016	10/10/2016
										Lab_Report_Number	EB1624749	EB1624749	EB1624693
				NEPM 2013 Commercial/Industrial D, Sand Soil HSL for Vapour Intrusion		NEPM 2013 EILS-Commercial and industrial	NEPM 2013 ESLs-Commercial and industrial, Coarse Soil	NEPM 2013 HIL-Commercial/Industrial D Soil	Airports (EP) Regulations [AL] - General Areas (1)	Maximum total concentration level in soil used as cover material of a operating QLD landfill (mg/kg)(3)			
Chem_Group	**ChemName**	**output unit**	**EQL**	**0-1m**	**1-2m**								
Halogenated	Hexachlorobenzene	mg/kg	0.05					80			<0.05	<0.05	<0.05
Heavy Metals	Arsenic	mg/kg	5			160		3000	500	200	8	19	14
	Cadmium	mg/kg	1					900	100	40	<1	<1	<1
	Chromium	mg/kg	2			310			60,000		39	41	65
	Copper	mg/kg	5			85		240000	5000	2000	16	20	18
	Lead	mg/kg	5			1800		1500	1500	600	12	13	12
	Mercury	mg/kg	0.1					730	75	30	<0.1	<0.1	<0.1
	Nickel	mg/kg	2			55		6000	3000	600	24	41	16
	Titanium	mg/kg	10								-	-	-
	Zinc	mg/kg	5			110		400000	35,000	14000	54	63	44
	Zirconium	mg/kg	0.5								-	-	-
MAH	Benzene	mg/kg	0.2	3	3		75				<0.2	<0.2	<0.2
	Toluene	mg/kg	0.5	NL	NL		135				<0.5	<0.5	<0.5
	Ethylbenzene	mg/kg	0.5	NL	NL		165				<0.5	<0.5	<0.5
	Xylenes (m & p)	mg/kg	0.5								<0.5	<0.5	<0.5
	Xylene (o)	mg/kg	0.5								<0.5	<0.5	<0.5
	Xylenes (Sum of total) (Lab Reported)	mg/kg	0.5	260	370		180				<0.5	<0.5	<0.5
	Total BTEX	mg/kg	0.2								<0.2	<0.2	<0.2
OCP	a-BHC	mg/kg	0.05								<0.05	<0.05	<0.05
	Aldrin	mg/kg	0.05								<0.05	<0.05	<0.05
	Aldrin & Dieldrin (Sum of total) (Lab Reported)	mg/kg	0.05					45			<0.05	<0.05	<0.05
	b-BHC	mg/kg	0.05								<0.05	<0.05	<0.05
	Chlordane (Sum of total)	mg/kg	0.05					530			<0.05	<0.05	<0.05
	cis-Chlordane	mg/kg	0.05								<0.05	<0.05	<0.05
	trans-Chlordane	mg/kg	0.05								<0.05	<0.05	<0.05
	d-BHC	mg/kg	0.05								<0.05	<0.05	<0.05
	DDD	mg/kg	0.05								<0.05	<0.05	<0.05
	DDE	mg/kg	0.05								<0.05	<0.05	<0.05
	DDT	mg/kg	0.2			640					<0.2	<0.2	<0.2
	DDT+DDE+DDD (Sum of total) (Lab Reported)	mg/kg	0.05					3600			<0.05	<0.05	<0.05
	Dieldrin	mg/kg	0.05								<0.05	<0.05	<0.05
	Endosulfan	mg/kg	0.05					2000			<0.05	<0.05	<0.05
	Endosulfan I	mg/kg	0.05								<0.05	<0.05	<0.05
	Endosulfan II	mg/kg	0.05								<0.05	<0.05	<0.05
	Endosulfan sulphate	mg/kg	0.05								<0.05	<0.05	<0.05
	Endrin	mg/kg	0.05					100			<0.05	<0.05	<0.05
	Endrin aldehyde	mg/kg	0.05								<0.05	<0.05	<0.05
	Endrin ketone	mg/kg	0.05								<0.05	<0.05	<0.05
	g-BHC	mg/kg	0.05								<0.05	<0.05	<0.05
	Heptachlor	mg/kg	0.05					50			<0.05	<0.05	<0.05
	Heptachlor epoxide	mg/kg	0.05								<0.05	<0.05	<0.05
	Methoxychlor	mg/kg	0.2					2500			<0.2	<0.2	<0.2
PAH	Acenaphthene	mg/kg	0.5								<0.5	<0.5	<0.5
	Acenaphthylene	mg/kg	0.5								<0.5	<0.5	<0.5
	Anthracene	mg/kg	0.5								<0.5	<0.5	<0.5
	Benz(a)anthracene	mg/kg	0.5								<0.5	<0.5	<0.5
	Benzo(a)pyrene	mg/kg	0.5				1.4		5		<0.5	<0.5	<0.5
	Benzo(a)pyrene TEQ (lower bound)*	mg/kg	0.5					40			<0.5	<0.5	<0.5
	Benzo(a)pyrene TEQ (medium bound)*	mg/kg	0.5					40			0.6	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)*	mg/kg	0.5					40			1.2	1.2	1.2
	Benzo(b)&(j)fluoranthene	mg/kg	0.5								<0.5	<0.5	<0.5
	Benzo(g,h,i)perylene	mg/kg	0.5								<0.5	<0.5	<0.5
	Benzo(k)fluoranthene	mg/kg	0.5								<0.5	<0.5	<0.5
	Chrysene	mg/kg	0.5								<0.5	<0.5	<0.5
	Dibenz(a,h)anthracene	mg/kg	0.5								<0.5	<0.5	<0.5
	Fluoranthene	mg/kg	0.5								<0.5	<0.5	<0.5
	Fluorene	mg/kg	0.5								<0.5	<0.5	<0.5
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5								<0.5	<0.5	<0.5
	Naphthalene	mg/kg	0.5	NL	NL	370					<0.5	<0.5	<0.5
	Phenanthrene	mg/kg	0.5								<0.5	<0.5	<0.5
	Pyrene	mg/kg	0.5								<0.5	<0.5	<0.5
	PAH (Sum of Common 16 PAHs - Lab Reported)	mg/kg	0.5					4000	100		<0.5	<0.5	<0.5
Pesticides-Others	Demeton-s-methyl	mg/kg	0.05								-	-	-
Total Petroleum Hydrocarbons	TRH C10 - C14 SG Cleanup	mg/kg	25								<50	<50	<50
	TRH C15 - C28 SG Cleanup	mg/kg	50								<100	<100	<100
	TRH C29 - C36 SG Cleanup	mg/kg	50								<100	<100	<100
	TRH C10 - C36 (Sum, Lab Reported) SG Cleanup	mg/kg	25								<50	<50	<50
	TRH >C10 - C16 SG Cleanup F2	mg/kg	50								<50	<50	<50
	TRH >C10 - C16 SG Cleanup Less Naphthalene F2	mg/kg	50								<50	<50	<50
	TRH >C16 - C34 SG Cleanup F3	mg/kg	100								<100	<100	<100
	TRH >C34 - C40 SG Cleanup F4	mg/kg	100								<100	<100	<100
	TRH C10 - C40 (Sum, Lab Rptd) SG Cleanup	mg/kg	50								<50	<50	<50
	TRH C6 - C9 Fraction	mg/kg	10								<10	<10	<10
	TRH C10 - C14 Fraction	mg/kg	50								-	-	-
	TRH C15 - C28 Fraction	mg/kg	100								-	-	-
	TRH C29 - C36 Fraction	mg/kg	100								-	-	-
	TRH+C10 - C36 (Sum of total) (Lab Reported)	mg/kg	50								-	-	-
	TRH+C10 - C40 (Sum of total) (Lab Reported)	mg/kg	50								-	-	-
	TRH C6 - C10 Fraction F1	mg/kg	10								<10	<10	<10
	TRH C6 - C10 Fraction Less BTEX F1	mg/kg	10	250|260|310	360|370|480		215		800		<10	<10	<10
	TRH >C10 - C16 Fraction F2	mg/kg	50								-	-	-
	TRH >C10 - C12 Fraction Less Naphthalene F2	mg/kg	50				170		500		-	-	-
	TRH >C16 - C34 Fraction F3	mg/kg	100				1700		500		-	-	-
	TRH >C34 - C40 Fraction F4	mg/kg	100				3300				-	-	-

All concentrations are expressed in mg/kg unless indicated otherw ise
"<" Denotes below detection limit and is in grey font.
"-" Denotes analysis not requested for this sample
" * " Denotes guidelines are based on the most conservative values.
1. Airports (Environmental Protection) Regulations 1997
2. NEPM - National Environment Protection (Assessment of Site Contamination) Measure (1999), amended May 2013.
3. Model operating conditions, ERA

8.5 Groundwater Analysis

Laboratory test results for groundwater sample results are summarised in **Table 10** for PFAS and **Table 11** for metals.

The laboratory results from the original and supplementary investigations indicated:

- With the exception of BAC-MW07, all 6:2 FtS concentrations in all groundwater samples are below laboratory limits of reporting (LORs). All 6:2 FtS concentrations were well below interim screening levels for human health (drinking water) and aquatic ecosystem protection. The laboratory detection limit exceeds the interim screening level for human consumption of fish.
- PFOA (including related products) concentrations in groundwater samples were below interim screening levels for human health (drinking water), aquatic ecosystem protection and human consumption of fish, as well as below enHealth drinking and recreational waters guidelines and below LORs, both in January 2016 and October 2016.
- PFOS+PFHxS (including related products) concentrations in all groundwater samples are below the interim screening levels for human health (drinking water) and aquatic ecosystems protection as well as below enHealth drinking and recreational waters guidelines and below LORs, both in January 2016 and October 2016. PFOS detected concentrations and the laboratory reporting limit exceed the interim screening level for human consumption of fish in both the 2016 sampling events.
- Other PFAS compounds were reported in wells AM-BH08, AM-BH09, BIP/MW1 and BIP/MW2 monitored in January and October 2016.
- Exceedances of the AEPR and NEPM GILs for marine waters are noted for nickel and zinc in well AM-MW31 (the only well tested for metals, in October 2016 only).

These results indicate that contamination management will be required if impacted groundwater is encountered and/or extracted (i.e. for dewatering) during construction works. Refer to CSM and qualitative risk assessment in Section 9 and Section 10 respectively.

Table 10: Groundwater Laboratory Results Summary for PFAS

			Per- and poly- fluoroalkyl Substances (PFAS)																															
			N-Et-FOSE	N-Et-FOSA	N-Me-FOSA	N-Me-FOSE	PFDcS	Perfluorohexanesulfonic acid (PFHxS)	Perfluorobutanesulfonic acid (PFBS)	Perfluorooctanesulfonamide (PFOSA)	Perfluorooctanesulfonic acid (PFOS)	PFHxS+PFOS	Sum of detected related products[2] + PFOS	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	8:2 Fluorotelomer sulfonate	6:2 Fluorotelomer Sulfonate (6:2 FtS)	Perfluorooctanoate (PFOA)	Sum of detected related products[2] + PFOA	10:2 Fluorotelomer sulfonic acid	4:2 Fluorotelomer sulfonic acid	Perfluoro-n-pentanoic acid (PFPeA)	Perfluorobutanoic acid (PFBA)	Perfluoropentane sulfonic acid (PFPeS)	N-methyl-perfluorooctanesulfonamidoacetic acid (MeFOSAA)	N-ethyl-perfluorooctanesulfonamidoacetic acid (EtFOSAA)	PFAS (Sum of total - Lab Reported)
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	Jan-16		0.1	0.005	0.05	0.1	0.005	0.002	0.002	0.002	0.002		-	0.002	0.005	0.002	0.002	0.002	0.05	0.005	0.005	0.01	0.01	0.002		0.005	0.005	0.002	0.01	0.002	0.002	0.002	0.002
EQL	Oct-16		0.005	0.005	0.005	0.005	0.002	0.002	0.002	0.002	0.002	0.002	-	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.002	0.005	0.005	0.002										
Interim Screening Levels - Groundwater-Human Health (drinking water only)[1]											0.2	0.2	0.2										5	0.4	0.4									
Interim Screening Levels - Surface Water - Ecological (toxicity effects on aquatic organisms)[1]											6.66	6.66	6.66											2900	2900									
Interim Screening Levels - Surface Water - Human Health (consumption of fish)[1]											0.00065	0.00065	0.00065										0.0065	0.3	0.3									
enHealth Drinking Water Quality Guideline								0.5			0.5	0.5	0.5											5	5									
enHealth Recreational Water Quality Guideline								5			5	5	5											50	50									
Field ID	**Sampled Date**	**Lab Report Number**																																
AM-BH01	4/01/2016	EB1600085	<0.1	<0.005	<0.05	<0.1	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.05	<0.005	<0.005	<0.01	<0.01	<0.002	<0.002	-	-	-	-	-	-	-	-	-
AM-BH04	4/01/2016	EB1600085	<0.1	<0.005	<0.05	<0.1	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.05	<0.005	<0.005	<0.01	<0.01	<0.002	<0.002	-	-	-	-	-	-	-	-	-
AM-BH08	4/01/2016	EB1600085	<0.1	<0.005	<0.05	<0.1	<0.005	<0.002	0.004	<0.002	<0.002	0.004	0.004	<0.002	<0.005	<0.002	0.009	<0.002	<0.05	<0.005	<0.005	<0.01	<0.01	<0.002	0.009	-	-	-	-	-	-	-	-	-
	25/10/2016	EB1625464	<0.005	<0.005	<0.005	<0.005	<0.002	0.007	0.008	<0.002	<0.002	0.015	0.015	<0.002	<0.002	<0.002	0.002	<0.002	<0.005	<0.002	<0.002	<0.005	<0.005	<0.002	0.002	<0.005	<0.005	<0.002	<0.01	0.005	<0.002	<0.002	0.022
AM-BH19	4/01/2016	EB1600085	<0.1	<0.005	<0.05	<0.1	<0.005	0.003	0.004	<0.002	<0.002	0.007	0.007	<0.002	<0.005	<0.002	0.005	<0.002	<0.05	<0.005	<0.005	<0.01	<0.01	<0.002	0.005	-	-	-	-	-	-	-	-	-
	25/10/2016	EB1625464	<0.005	<0.005	<0.005	<0.005	<0.002	0.012	0.005	<0.002	<0.002	0.007	0.007	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.002	<0.01	0.003	<0.002	<0.002	0.02
AM-BH28	4/01/2016	EB1600085	<0.1	<0.005	<0.05	<0.1	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.05	<0.005	<0.005	<0.01	<0.01	<0.002	<0.002	-	-	-	-	-	-	-	-	-
BAC-MW07	4/01/2016	EB1600085	<0.1	<0.005	<0.05	<0.1	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.05	<0.005	<0.005	<0.01	0.03	<0.002	0.03	-	-	-	-	-	-	-	-	-
BAC-MW24	4/01/2016	EB1600085	<0.1	<0.005	<0.05	<0.1	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.05	<0.005	<0.005	<0.01	<0.01	<0.002	<0.002	-	-	-	-	-	-	-	-	-
BIP/MW1	4/01/2016	EB1600085	<0.1	<0.005	<0.05	<0.1	<0.005	<0.002	0.006	<0.002	<0.002	0.006	0.006	<0.002	<0.005	<0.002	0.007	<0.002	<0.05	<0.005	<0.005	<0.01	<0.01	<0.002	0.007	-	-	-	-	-	-	-	-	-
	25/10/2016	EB1625464	<0.005	<0.005	<0.005	<0.005	<0.002	0.011	0.008	<0.002	<0.002	0.019	0.019	<0.002	<0.002	<0.002	0.006	<0.002	<0.005	<0.002	<0.002	<0.005	<0.005	<0.002	0.006	<0.005	<0.005	0.004	<0.01	0.004	<0.002	<0.002	0.033
BIP/MW2	4/01/2016	EB1600085	<0.1	<0.005	<0.05	<0.1	<0.005	<0.002	0.002	<0.002	<0.002	0.002	0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.05	<0.005	<0.005	<0.01	<0.01	<0.002	<0.002	-	-	-	-	-	-	-	-	-
	25/10/2016	EB1625464	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	0.002	<0.002	<0.002	0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.002	<0.01	<0.002	<0.002	<0.002	0.002
BP/MW6	4/01/2016	EB1600085	<0.1	<0.005	<0.05	<0.1	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.05	<0.005	<0.005	<0.01	<0.01	<0.002	<0.002	-	-	-	-	-	-	-	-	-
AM-MW31	25/10/2016	EB1625464	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002

All concentrations are expressed in µg/L unless indicated otherw ise
"<" Denotes below detection limit
1. Airservices Australia, *Managing PFC Contamination at Airports, Interim Contamination Management Strategy and Decision Framework*, GHD, June 2015.
2. Related products are suspected or may to transformor degrade to PFOS or PFOA.
3. Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, *enHealth Statement: Interim national guidance on human health reference values for per- and poly-fluoroalkyl substances for use in site investigations in Australia,* June 2016

Table 11: Groundwater Laboratory Results Summary for Heavy Metals and mercury

			Heavy Metals							
			Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Zinc (Filtered)
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
EQL			1	0.1	1	1	1	0.1	1	5
NEPM 2013 GILs, Recreational			**100**	**20**		**20,000**	**100**	**10**	**200**	
NEPM 2013 GILs, Marine Waters				*0.7*	*27*	*1.3*	*4.4*	*0.1*	*7*	*15*
AEPR 1997 - Marine Waters			50	2	50	5	5	0.1	15	50
Field_ID	**Sampled_Date_Time**	**Lab_Report_Number**								
AM-MW31	25/10/2016	EB1625464	<5	<0.5	<5	<5	<5	<0.1	*24*	*118*

All concentrations are expressed in µg/L unless indicated otherw ise
"<" Denotes below detection limit and is in grey font.
1. NEPM - National Environment Protection (Assessment of Site Contamination) Measure (1999), amended May 2013.
2. Airports (Environmental Protection) Regulations 1997

9.0 CONCEPTUAL SITE MODEL

9.1 Developing the Conceptual Site Model (CSM)

In accordance with Schedule B1 of the NEPM 2013, a CSM has been developed for the site to assess identified contamination in relation to its current condition and planned disturbances of soil and groundwater. The essential elements of the CSM have been identified in the guidelines as the following:

- Known and potential sources of contamination and contaminants of concern including the mechanism(s) of contamination (i.e. nature of the source release into the environment).
- Potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air). This project focuses on groundwater and surface water as the affected media.
- Human and ecological receptors.
- Potential and complete exposure pathways.

The above elements have been addressed in the following sections.

9.2 Contaminants of Interest

The results of the desktop assessment (Section 4) and the investigations (Section 8) identified the following contaminants of interest:

Groundwater
PFOS and its related products and 6:2 FtS detected in some groundwater samples at levels exceeding surface water interim screening level for human consumption of fish.
6:2 FtS and PFOS laboratory detection levels exceed surface water interim screening level for human consumption of fish.
Nickel and zinc exceed Marine Waters guidelines presented in the AEPR 1997 and NEPM 2013 (GILs) in one well installed on site.

The low levels of PFAS, heavy metals and TRH detected in the soils at the Stage 1 investigation area of the Auto Mall precinct are not considered to represent contamination requiring management if disturbed.

The site soils are considered to be suitable for reuse at other locations at the airport, without restriction.

Low levels of PFAS inside soil may become mobilised in groundwater as a result of surcharging activities consolidating these materials below the water table. It is not expected that these impacts will be greater that the level of PFAS currently detected in groundwater.

On this basis, soil contamination is not considered further in this CSM or in the Qualitative Risk Assessment.

PFAS and heavy metals contamination in groundwater is further considered in this CSM and Qualitative Risk Assessment.

9.3 Sources

A source of PFAS was not present at the Auto Mall Precinct site. Low level and diffuse PFAS impact was detected in five of the ten groundwater investigation locations.

Heavy metals identified in groundwater could potentially be associated with the historical use of the site as construction yard, but this in only inferred at this stage.

For dewatering activities in these areas, the extracted groundwater represents a source of contamination that could be released to the environment and will require management.

9.4 Receptors

The key receptors for identified groundwater contamination at the investigation sites comprise:

- **General public**: Persons who may consume fish or other aquatic species from surface water bodies into which groundwater has been discharged (either directly through dewatering discharge or indirectly as a groundwater discharge into the receiving environment), and may access the surface water bodies for recreational use. Adjacent surface water bodies comprise:
  - Manmade surface drains: Surface drain will be formed around the perimeter of the Auto Mall Precinct site. These drains will connect to existing artificial surface drains to the north and south west of site. The artificial drains are semi tidal and discharge into tidal drains (the Kedron Brook Floodway Drain about 1 km north west or a tributary of Shultz Canal 1.5 km south west of this site). Both of these drains discharge into Kedron Brook, which ultimately drains into Moreton Bay.
- **Aquatic ecosystems**: As heavy metals are reported in concentrations exceeding guidelines for the protection of the marine waters, aquatic ecosystems are considered as potential receptors in surface water bodies into which groundwater has been discharged (either directly through dewatering discharge or indirectly as a groundwater discharge into the receiving environment). Titanium is less likely than nickel and zinc to be mobile as it is part of the crystalline structure of the minerals.

Results of the groundwater investigation and other Golder investigations within the vicinity of the site indicate that the groundwater quality beneath the proposed development is impacted with low levels of PFAS, due to historical offsite activities, and heavy metals. No further impacts to groundwater are expected due to site contamination. Furthermore, the brackish nature of the groundwater would make it unviable as a source of potable water, and unsuitable for agriculture or other beneficial use.

Site workers who may come in direct contact with groundwater are not considered to be key receptors as the PFAS concentrations detected in all groundwater samples were well below interim screening levels for drinking water, and dermal absorption via direct contact is not a pathway for PFAS in humans.

Terrestrial ecosystems are not considered to be key receptors as the PFAS concentrations detected (in the parts per billion) in the groundwater are so low that their application to soil would not result in detection (in parts per million). The PFAS concentration reported in soils were below the ecological screening levels.

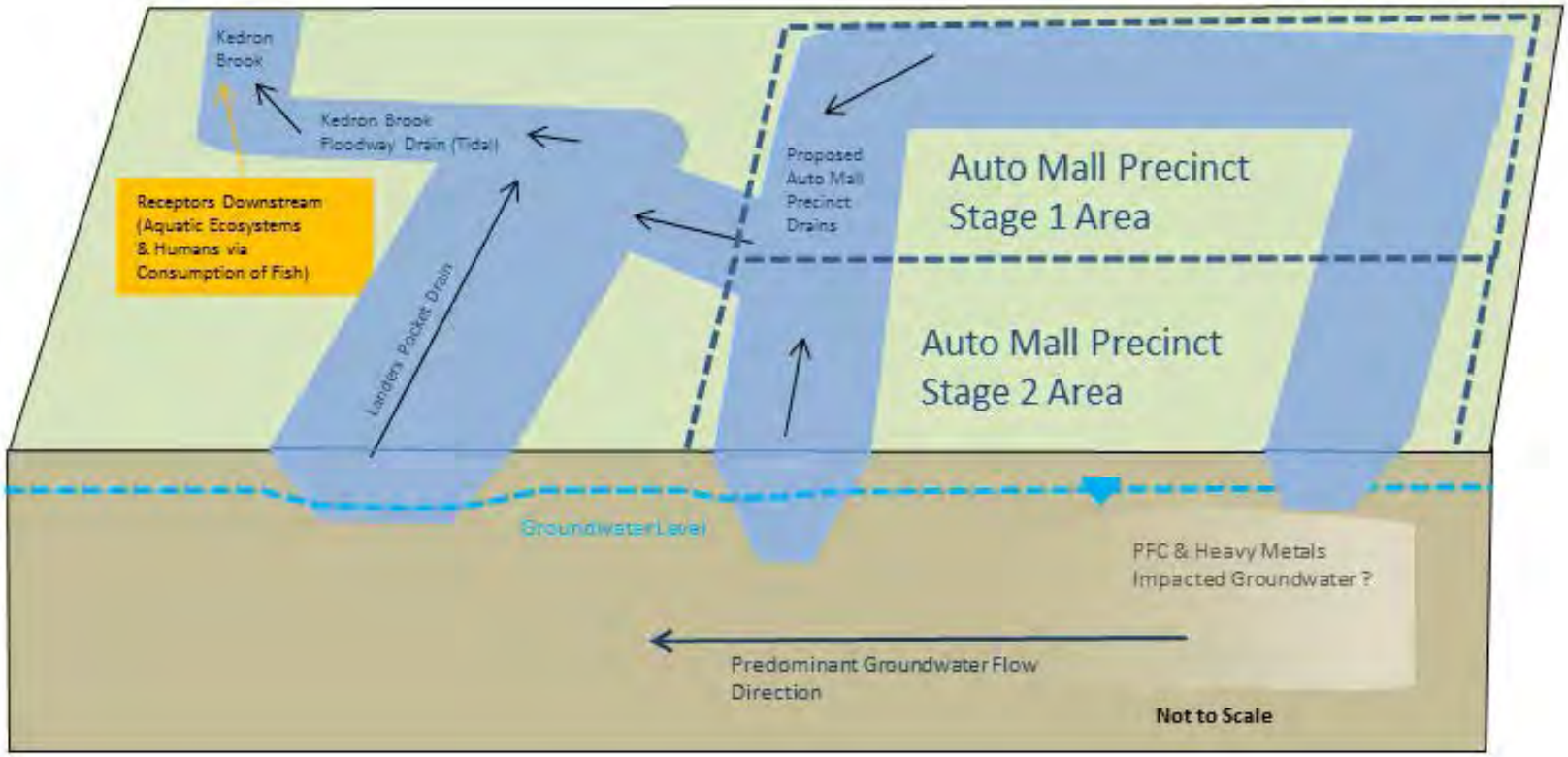
9.5 Pathways for Exposure to PFAS Impacted Groundwater

The key contaminant transport pathways for PFAS-impacted groundwater are:

- **Groundwater migration to surface water bodies**: localised groundwater flow beneath the site is expected to be in a westerly direction towards Landers Pocket drain, which discharges into the Kedron Brook Floodway Drain. Depending on the level of dilution and the resulting concentrations in the ultimate receiving water body, humans may be exposed to unacceptable concentrations of PFAS through the consumption of fish/aquatic species.
- **Surface water discharge of groundwater seepage entering excavations**: Currently planned construction activities include excavation of drainage channels to an invert level of RL 0.2 m AD across the site. Groundwater was recently measured at an average level of RL 1.2 m AD. It is expected that groundwater seepage will enter excavations for the drainage channels and be discharged to the existing surface drainage networks. Depending on the level of dilution and the resulting concentrations in the ultimate receiving water body, humans may be exposed to unacceptable concentrations of PFAS through the consumption of fish/aquatic species, and aquatic ecosystems to unacceptable concentrations of heavy metals.

9.6 Conceptual Site Model Schematic

A schematic of the Auto Mall Precinct CSM is shown below.



10.0 ENVIRONMENTAL RISK ASSESSMENT

10.1 Qualitative Assessment

Risk is measured as a function of the likelihood and consequence of an event occurring. This risk assessment has been completed with the consideration of source - pathway - receptors, as described in the conceptual site model above and is in general accordance with the NEPM 2013.

The qualitative risk assessment was undertaken in general accordance with AS/NZS ISO 31000:2009 Risk management - Principles and guidelines and adopting the likelihood, consequence rankings summarised below.

Qualitative Risk Assessment Rankings

Likelihood (L)	Description	Consequences (C)	Description
1) Rare	Impact is unlikely to occur within lifetime of project operations. No further management or engineering controls are required to minimise potential for occurrence	1) Low	Negligible or acceptable impact. No further management or engineering controls are required assuming no change to current conditions.
2) Low	Minor management control may need to be considered to reduce likelihood of occurrence.	2) Low to Moderate	Impact may be acceptable. Further monitoring is required to establish potential significance. Implementation of simple management controls.
3) Moderate	Impact has moderate likelihood of occurrence. Appropriate management control can result in low likelihood of occurrence.	3) Moderate	Moderate impact. Potentially acceptable if appropriate management controls are implemented.
4) High	Appropriate management control may not be sufficient to minimise likelihood and thus engineering or design solution may need to be considered.	4) Moderate to High	Impact has the potential to be unacceptable. Further monitoring may be required to establish potential significance. Implementation of appropriate management controls is required.
5) Almost Certain	Impact is believed to be inevitable or has already occurred. Management controls cannot practically minimise likelihood of occurrence to acceptable levels. Engineering or design solutions are required, if possible.	5) High	Unacceptable impact. The potential impact has a high severity and cannot necessarily be managed, should it occur.

The resulting qualitative risk ranking matrix adopted for the assessment is presented below.

Qualitative Risk Assessment Ranking Matrix

Risk Ranking (RR)	Consequences (C)				
Likelihood (L)	1) Low	2) Low to Moderate	3) Moderate	4) Moderate to High	5) High
6) Rare	1 (Low)	2 (Low)	3 (Low)	4 (Low)	5 (Moderate)
7) Low	2 (Low)	4 (Low)	6 (Moderate)	8 (Moderate)	10 (Moderate)
8) Moderate	3 (Low)	6 (Moderate)	9 (Moderate)	12 (Moderate)	15 (High)
9) High	4 (Low)	8 (Moderate)	12 (Moderate)	16 (High)	20 (High)
10) Certain	5 (Moderate)	10 (Moderate)	15 (High)	20 (High)	25 (High)

Where:

- Low Risk Ranking: Score 0 to 4. Acceptable, no specific management and/or engineering controls typically necessary.
- Moderate Risk Ranking: Score 5 to 15. Potentially acceptable subject to appropriate management and/or engineering controls.
- High Risk Ranking: Score 15 and above. Not acceptable. Engineering controls generally required, possibly in conjunction with management controls.

Ranking for the source-pathway-receptor identified in the CSM are summarised below.

Risk Rankings

Receptors	Pathways	Assessment Factors	L	C	RR	Summary Item
Human Receptors						
General Public	Consumption of Fish (Groundwater migration to surface water bodies) PFAS	A dilution factor of about 11[2] would be required to reduce the highest detected groundwater PFAS concentrations below interim screening levels. A much greater dilution factor is expected for discharge of groundwater into the nearby surface water bodies	1	3	3	Low risk No further control measures
	Consumption of Fish (Groundwater seepage into proposed site drains and discharge into nearby surface water bodies) PFAS	The above considerations also apply to this pathway. It is expected that discharge of the volume of groundwater into the proposed drains alone (not including rainfall runoff) into connecting tidal drains will result in a much greater dilution factor than 11 (the dilution factor required for the highest detected groundwater PFAS concentration)..	1	3	3	Low risk No further control measures
Ecological receptors						
Aquatic ecosystems	Toxicity effects of heavy metals (Groundwater migration to surface water bodies)	A dilution factor of about 8[3] would be required to reduce the highest detected groundwater heavy metal concentrations below the proposed guideline. A much greater dilution factor is expected for discharge of groundwater into the nearby surface water bodies	1	2	2	Low risk No further control measures

[2] Calculated as the maximum concentration of any PFAS compound in groundwater in January and October 2016 divided by the corresponding Human Health Screening Level.

[3] Calculated as the maximum concentration of any heavy metal exceeding guidelines in groundwater divided by the corresponding exceeded guideline.

Receptors	Pathways	Assessment Factors	L	C	RR	Summary Item
	Toxicity effects of heavy metals (Groundwater seepage into proposed site drain and discharge into nearby surface water bodies)	The above considerations also apply to this pathway. It is expected that discharge of the volume of groundwater into the proposed drains alone (not including rainfall runoff) into connecting tidal drains will result in a much greater dilution factor than 13 (the dilution factor required for the highest detected groundwater heavy metal concentration).	1	2	2	Low risk No further control measures

11.0 CONCLUSION AND RECOMMENDATIONS

Based on the results of the contamination assessment, the following conclusions are drawn for the Stage 1 investigation area of the Auto Mall precinct.

- A low potential for soil contamination was indicated by field investigation results. No PFAS, heavy metals, TRH, BTEX, PAH and OCP concentrations above the proposed screening levels were detected in any soil samples. Where disturbed, soils from this area should be suitable for reuse at other locations at the airport without restriction. The soils may also be suitable for offsite reuse subject to more detailed sampling of excavated materials.
- Low levels of PFAS impact were detected in groundwater samples from 5 of the 10 groundwater wells analysed in January 2016, and 4 of the 5 wells analysed in October 2016.
- Site workers who may come in direct contact with groundwater are not considered to be key receptors as the PFAS concentrations detected in all groundwater samples were well below interim screening levels for drinking water.
- Aquatic ecosystems are not considered to be key receptors, as the PFAS concentrations in groundwater are below the interim screening levels for toxicity effects on aquatic organisms. However, a residual low risk to aquatic ecosystems is represented by heavy metals concentrations in groundwater.
- All groundwater samples had PFAS concentrations exceeding the surface water interim screening level for human consumption of fish/aquatic species. It is noted that the interim screening level is a factor of 3 times lower than the limit of reporting available at commercial analytical laboratories in Australia, using Ultratrace® methods, and therefore even non-detect results exceed this interim screening level. The interim screening level applies to the receiving water after dilution and its use to evaluate groundwater concentration (without dilution considerations) is conservative.
- A qualitative risk assessment for the PFAS concentrations detected in groundwater beneath this site, suggests a low risk outcome for subsequent human consumption of fish/aquatic species associated with groundwater migration to the nearby and downstream surface water bodies.
- A qualitative risk assessment of expected PFAS impacted groundwater seepage entering the proposed site drain suggests a low risk outcome for subsequent human consumption of fish/aquatic species from downstream tidal drains and waterways.

Development of a Contamination Management Plan for the Stage 1 investigation area of the Auto Mall Precinct is not considered to be warranted.

12.0 IMPORTANT INFORMATION

Your attention is drawn to the document *Important Information Relating to this Report*, which is included in **Appendix E** of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

Report Signature Page

GOLDER ASSOCIATES PTY LTD

Serena Curti	Paul Scells
Senior Environmental Engineer	Principal

SC/PKS/cs/hd

A.B.N. 64 006 107 857

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Figures

STAGE 2

STAGE 1

CSR Site 28

AM-BH09

AM-BH08 AM-BH08

BAC-BH07

AM-BH07

AM-BH23

AM-BH22

AM-BH21

AM-BH20

AM-BH19

AM-BH19

BIP/MW1

AM-BH06

AM-BH32

AM-BH05

AM-BH04 AM-BH04

AM-MW31

BIP/MW2

AM-BH03

AM-BH30

AM-BH02

BAC-BH24

AM-BH01 AM-BH01

AM-BH17

KEY MAP

Zillmere

Aspley

Nudgee

Wavell Heights

Brisbane Airport

Hendra

Albion

Lytton

Cannon

LEGEND

BAC CSR (2008)

Current Investigation

Well

Borehole

Previous Investigation

Monitoring Well

Site Boundary

NOTES

1. AERIAL PHOTOGRAPHY SUPPLIED BY NEARMAP LTD, DATED OCTOBER 2014
2. DEVELOPMENT YIELD PLAN LAYOUT SUPPLIED BY BAC AS CAD FILE 'BRIS0012 SK-004[E] DEVELOPMENT YIELD PLAN.PDF.DWG'
3. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P CORP., NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI (THAILAND), MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

0 50 100 200 300 metres

REFERENCE SCALE: 1:200,000 (AT A3)
PROJECTION: GDA 1994 MGA ZONE 56

CLIENT
BRISBANE AIRPORT CORPORATION

PROJECT
AUTO PRECINCT

TITLE
PROPOSED DEVELOPMENT WITH PREVIOUS AND CURRENT CONTAMINATION INVESTIGATION LOCATIONS

CONSULTANT

Golder Associates

YYYY-MM-DD	2016-12-01
PREPARED	HG
DESIGN	HG
REVIEW	SC
APPROVED	SC

PROJECT No.	CONTROL	Rev.	FIGURE
1538021	003	1	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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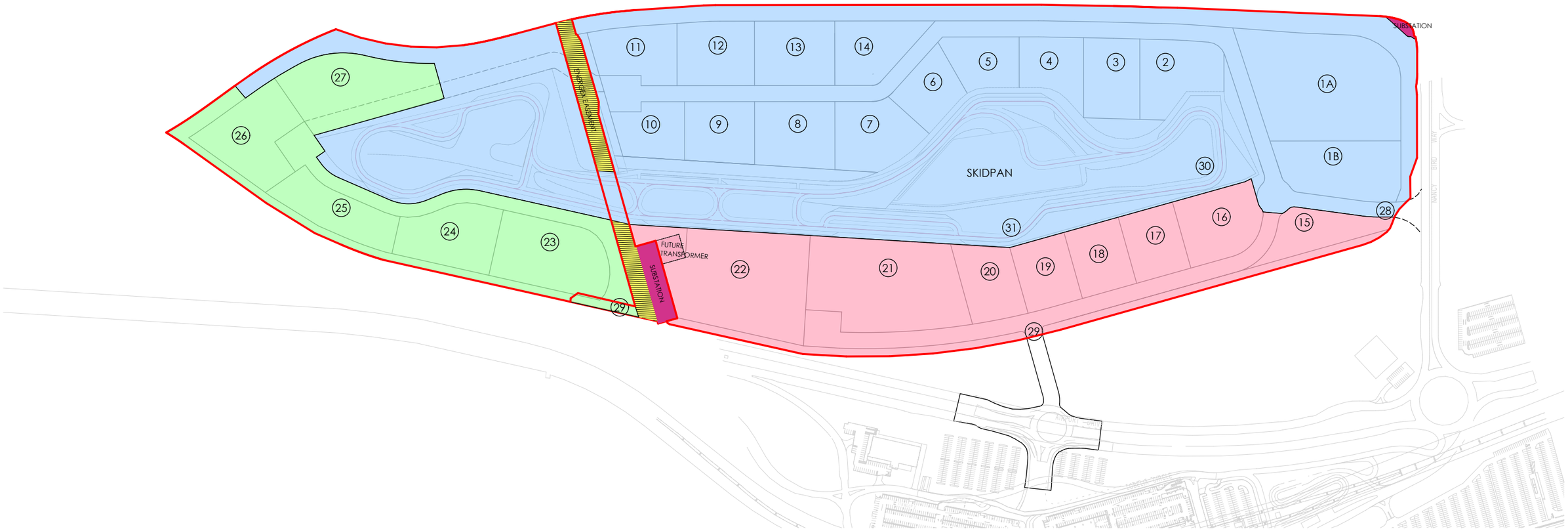
APPENDIX A

Current Staging Plan



INDICATIVE STAGE ONE

INDICATIVE STAGE TWO

INDICATIVE STAGE THREE

BAC

BAC DRIVER EXPERIENCE CENTRE

STAGING PLAN

MLDesign

112Bowen StreetBowen Street, Brisbane, Qld. 4000, Australia
Spring Hill, Brisbane, Qld. 4001, Australia
+61 732 216 618 | bris@mldesign.com.au | www.mldesign.com.au
© ML Design Pty Ltd Last saved: thomasw_MLD on 23/08/2016
ACN 602 370 810 Plot Date: 23/08/2016
ABN 93 602 370 810 File Path: P:\BRIS0012_BAC Commercial Business Strategy\B_Documentation\B1_Production\B1_Drawings\ArchICAD\Layouts\BRIS0012_LayoutAC18.pln

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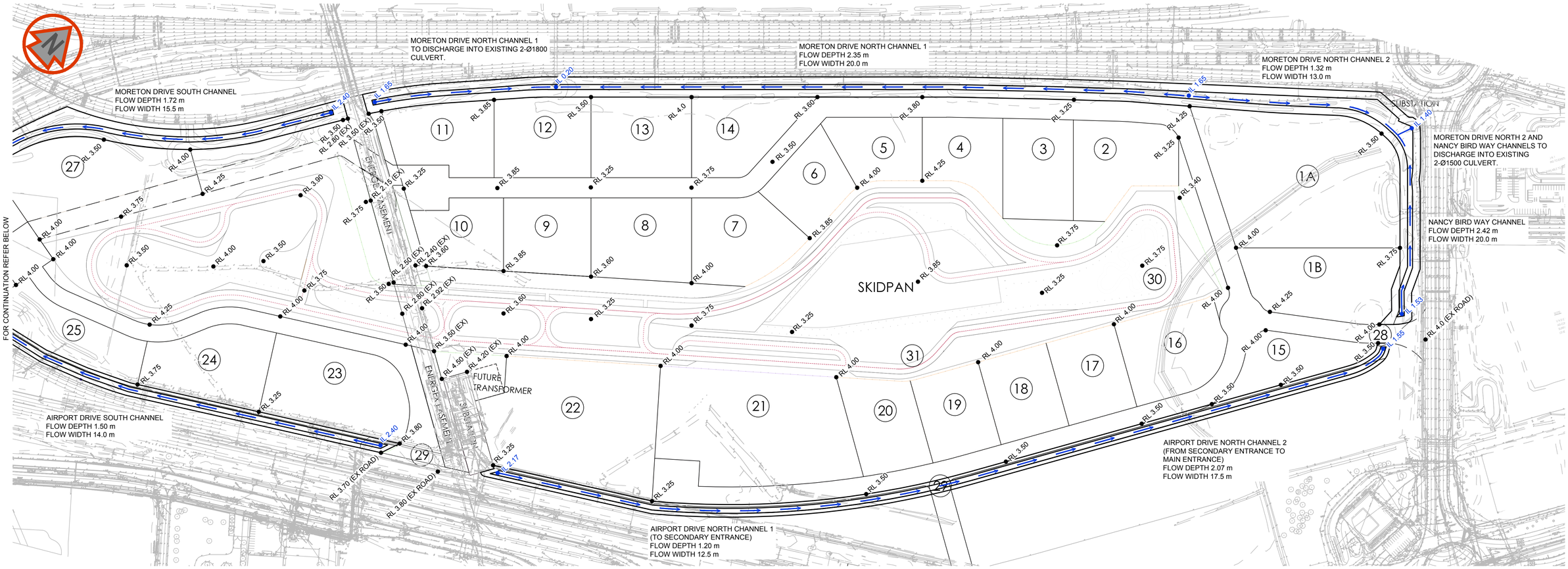

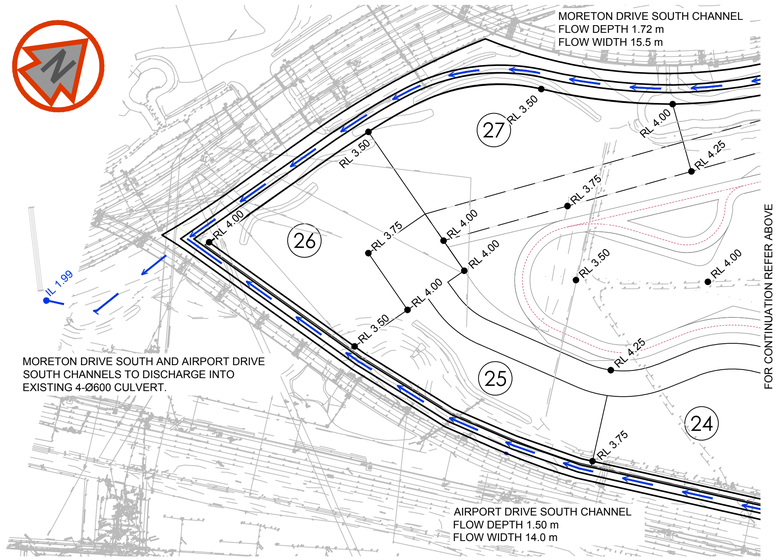

PRELIMINARY

Revision	Amendment	Approved	Revision Date
A	PRELIMINARY ISSUE	SRN	2016-09-02

OPUS
Brisbane Office
+61 7 3838 2400
PO Box 99
Spring Hill QLD 4004
Australia

Designed	Approved	Approved Date
J LUTWYCHE	S NOVAK	

Drawn	Scales
J LUTWYCHE	1:2000 (A1), 1:4000 (A3)

Project
BRISBANE AIRPORT CORPORATION
AUTO MALL PRECINCT

Sheet
SITE GRADING AND DRAINAGE
LAYOUT PLAN

Project No.	Sheet. No.	Revision
Q-B4176.00	SK08	A

1:2000 @ A1
1:4000 @ A3
0 20 40 60 80 100 120 140 160 180 200 m

APPENDIX B

Borehole Reports

REPORT OF BOREHOLE: AM-BH01

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510581.9 m E 6969493.9 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.99 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 16/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
ADH	L	16/12/15 08:30	-1.0									0.9 m stick up PVC; 50 mm dia. PVC
			-0.5									
			-0.0	2.99	J 0.00-0.50 m R = 0A PID = 1.3 ppm			SM	Silty SAND fine to medium grained, brown, with some rootlets up to 2 mm dia	D		Concrete
				0.25 / 2.74				CL	Sandy CLAY low plasticity, dark brown, fine grained sand, - dark brown high plasticity clay lense 50mm thick from 0.3m depth	M		Bentonite seal
			0.5		J 0.50-1.00 m R = 0A PID = 1.4 ppm							
				0.65 / 2.34				CH	CLAY high plasticity, brown with pockets of orange, with some fine sand			
			1.0		J 1.00-1.50 m R = 0A PID = 1.1 ppm							
				1.20 / 1.79				SC	Clayey SAND fine to medium grained, grey with pockets of pale brown and orange	M - W		Filter sand
			1.5		J 1.50-2.00 m R = 0A PID = 0.7 ppm							
				1.80 / 1.19				SP	SAND fine to medium grained, grey	W		0.4 mm aperture slots
			2.0		J 2.00-2.50 m R = 0A							
			2.5		J 2.50-3.00 m R = 0A PID = 0.3 ppm							
			3.0	-0.01					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.30 m DEPTH STANDPIPE INSTALLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			End cap
			3.5									
			4.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP 8_10.0 LIB.GLB Log GAP NON-CORED FULL PAGE 1538021 - BAC AUTOPRECINCT.GPJ <<DrawingFile>> 03/02/2016 10:50 8.30.004 Datgel Tools

REPORT OF BOREHOLE: AM-BH02

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510535 m E 6969436 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.5 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: BJV DATE: 16/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	16/12/15	0.0	2.50	J 0.00-0.50 m R = 0A PID = 1.8 ppm			SM	Silty SAND fine to medium grained, brown	D		
				0.30								
				2.20				CL	Sandy CLAY low plasticity, brown with pockets of orange/red, fine grained sand			
			0.5		J 0.50-1.00 m R = 0A PID = 1.6 ppm							
				0.70								
				1.80					dark brown high plasticity clay 150 mm thick, trace wood, organic odour			
				0.85								
				1.65				CI	CLAY medium plasticity, brown with pockets of orange, trace fine sand			
			1.0		J 1.00-1.50 m R = 0B PID = 1 ppm							
				1.10								
				1.40				CH	CLAY high plasticity, grey, Sulphide/Sulphate odour	M		
			1.5		J 1.50-2.00 m R = 0B PID = 0.7 ppm							
				1.80								
				0.70				CI	Sandy CLAY low plasticity, grey, fine to medium grained sand			
			2.0		J 2.00-2.50 m R = 0A PID = 0.8 ppm							
				2.20								
				0.30				SP	SAND fine to medium grained, grey			
			2.5		J 2.50-3.00 m R = 0A					W		
			3.0	-0.50					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 2.20 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP 8_10.0 LIB.GLB Log GAP NON-CORED FULL PAGE 1538021 - BAC AUTOPRECINCT.GPJ <<DrawingFile>> 03/02/2016 10:50 8.30.004 Datgel Tools

REPORT OF BOREHOLE: AM-BH03

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510422.6 m E 6969350.5 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.92 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: BJV DATE: 16/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	16/12/15	0.0	2.92	J 0.00-0.50 m R = 0A PID = 1.3 ppm			SM	Silty SAND fine to medium grained, brown, trace fine, subangular gravel	D		
				0.10 2.82				CL	Sandy CLAY low plasticity, brown with orange pockets, trace wood fragents	D - M		
			0.5	0.55 2.37	J 0.50-1.00 m R = 0A PID = 1.5 ppm			CI	CLAY medium plasticity, dark brown with orange pockets, trace fine sand			
				0.70 2.22				CH	CLAY high plasticity, brown			
				0.90 2.02				CI	Sandy CLAY medium plasticity, grey, fine grained sand			
			1.0		J 1.00-1.50 m R = 0A PID = 0.6 ppm					M		
			1.5	1.50 1.42	J 1.50-2.00 m R = 0A PID = 0.6 ppm			SP	SAND fine to medium grained, grey, with some clay to 2.0 m			
			2.0		J 2.00-2.50 m R = 0A PID = 1 ppm							
			2.5		J 2.50-3.00 m R = 0A PID = 0.3 ppm					W		
			3.0	-0.08					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 2.00 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH04

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510354.2 m E 6969321.2 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.67 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: BJV DATE: 16/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
			-1.0									1.0 m stick up PVC
			-0.5									50 mm dia. PVC
ADH	L	16/12/15	-0.0	2.67	J 0.00-0.50 m R = 0A PID = 1 ppm			SM	Silty SAND fine to medium grained, brown	D		Concrete
				0.20 2.47				CI	CLAY medium plasticity, brown with pockets of orange			Bentonite seal
			0.5		J 0.50-1.00 m R = 0A PID = 1 ppm							
				0.70 1.97				CI	Sandy CLAY high plasticity, dark brown, fine to medium grained sand	M		Filter sand
				0.85 1.82					grey below 0.85 m			
			1.0		J 1.00-1.50 m R = 0A PID = 1 ppm							
				1.20 1.47				SP	SAND fine to medium grained, grey, trace clay			
			1.5		J 1.50-2.00 m R = 0A PID = 0.4 ppm							
			2.0		J 2.00-2.50 m R = 0A PID = 0.9 ppm					W		0.4 mm aperture slots
			2.5		J 2.50-3.00 m R = 0A PID = 0.2 ppm							
			3.0	-0.33					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.20 m DEPTH STANDPIPE INSTALLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			End cap
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH05

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510265 m E 6969259 m N MGA94 56	DRILL RIG: Comacchio 305		
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.5 m DATUM: AD	CONTRACTOR: MGS		
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: BJV	DATE: 16/12/15	
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB	DATE: 21/1/16	

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	16/12/15	0.0	2.50	J 0.00-0.50 m R = 0A PID = 0.6 ppm			SM	Silty SAND fine to medium grained, brown	D		
				0.33 2.17				CL-CI	CLAY low to medium plasticity, brown to dark brown with orange pockets	M		
			0.5	0.60 1.90	J 0.50-1.00 m R = 0A PID = 0.4 ppm			CH	CLAY high plasticity, dark brown			
				0.70 1.80				CL-CI	CLAY low to medium plasticity, brown to dark brown with orange pockets			
			1.0	1.30	J 1.00-1.50 m R = 0A PID = 0.3 ppm							
				1.20				SP	SAND fine to medium grained, grey, with some clay to 1.8 m depth	W		
			1.5		J 1.50-2.00 m R = 0A PID = 1.5 ppm							
			2.0		J 2.00-2.50 m R = 0A PID = 1.2 ppm							
			2.5		J 2.50-3.00 m R = 0A PID = 1.1 ppm							
			3.0	-0.50					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.30 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH06

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510162 m E 6969192 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.5 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 16/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	16/12/15	0.0	2.50	J 0.00-0.50 m R = 0A PID = 1.5 ppm			SM	Silty SAND fine to medium grained, brown	D		
				0.25								
				0.30					trace wood fragments 10 to 20 mm			
				2.20				CL	Sandy CLAY low plasticity, brown with orange pockets, fine grained sand	M		
			0.5		J 0.50-1.00 m R = 0A PID = 1.4 ppm							
				0.80								
				1.70				CH	CLAY high plasticity, dark brown			
				0.90								
				1.60				CI	Sandy CLAY medium plasticity, brown with orange pockets, fine sand			
			1.0		J 1.00-1.50 m R = 0A PID = 0.6 ppm							
				1.20								
				1.30				CH	CLAY high plasticity, grey			
			1.5		J 1.50-2.00 m R = 0A PID = 1.2 ppm							
				1.60								
				0.90				CI-CH	Sandy CLAY medium to high plasticity, grey, fine sand			
			2.0		J 2.00-2.50 m R = 0A PID = 0.4 ppm					M - W		
			2.5		J 2.50-3.00 m R = 0A PID = 0.3 ppm							
			3.0	-0.50					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.60 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH07

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510045 m E 6969158 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 3.2 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	17/12/15	0.0	3.20	J 0.00-0.50 m R = 0A PID = 1.6 ppm			SM	Silty SAND fine to medium grained, brown, trace roolets 2mm dia	D		FILL
				0.20								
				0.28				CI	Sandy CLAY medium plasticity, pale brown to brown, fine grained sand			
				2.92					Clayey COBBLES coarse, to 80 mm, angular, uniform sized, brown, with some fine grained sand			
			0.5	0.60	J 0.50-1.00 m R = 0A PID = 1.9 ppm							
				2.60				CL	Sandy CLAY low plasticity, brown with orange pockets, fine grained sand, trace fine to angular gravel			NATURAL
			1.0	1.00						M		
				2.20	J 1.00-1.50 m R = 0A PID = 1.6 ppm			CH	CLAY high plasticity, dark brown			
				1.10								
				2.10				CI	Sandy CLAY medium plasticity, brown with orange pockets, fine to medium grained sand			
			1.5	1.60	J 1.50-2.00 m R = 0A PID = 0.5 ppm							
				1.60					becoming grey			
				1.80								
				1.40				SC	Clayey SAND fine to medium grained, grey, trace wood fragments up to 4 mm to 2.4 m depth			
			2.0		J 2.00-2.50 m R = 0A PID = 1.6 ppm							
										W		
			2.5		J 2.50-3.00 m R = 0A PID = 1.2 ppm							
			3.0	0.20					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.80 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH08

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509991.0 m E 6969080.1 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.88 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
ADH	L	Groundwater not observed	-1.0									0.63 m stick up PVC (Monument cover); 50 mm dia. PVC
			-0.5									
			-0.0	2.88	J 0.00-0.50 m R = 0A PID = 1.8 ppm			SM	Silty SAND fine to medium grained, brown, with some anugular gravel up to 35 mm dia.	D		concrete; Bentonite seal
				0.35 / 2.53				CL	Sandy CLAY low plasticity, brown, fine grained sand	D - M		
			0.5		J 0.50-1.00 m R = 0A PID = 2.4 ppm							
				0.70 / 2.18				CI	CLAY medium plasticity, brown with orange pockets, trace rootlets			
			1.0		J 1.00-1.50 m R = 0A PID = 2.5 ppm							
				1.25 / 1.63				CH	CLAY high plasticity, dark brown			Filter sand
			1.5		J 1.50-2.00 m R = 0A							
				1.70 / 1.18				CI	Sandy CLAY medium plasticity, grey, fine to medium grained sand, trace wood fragments	M		0.4 mm aperture slots
			2.0		J 2.00-2.50 m R = 0A PID = 1.9 ppm							
			2.5		J 2.50-3.00 m R = 0A PID = 1.5 ppm							
				2.60 / 0.28				CH	CLAY high plasticity, grey			
			3.0	-0.12					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT OBSERVED STANDPIPE INSTALLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			End cap
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH09

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509916 m E 6969013 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 3.3 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L		0.0	3.30	J 0.00-0.50 m R = 0A PID = 1.6 ppm			SM	Silty SAND fine to medium grained, brown, trace rootlets			FILL
				0.10								
	H			3.20					Clayey COBBLES to 100 mm, angular, uniform sized, grey, with some fine to medium grained sand	D		
			0.5		J 0.50-1.00 m R = 0A PID = 1.9 ppm							
				0.65								
	L			2.65				CI	Sandy CLAY medium plasticity, pale brown, fine sand	D - M		NATURAL
			1.0	1.00								
				2.30	J 1.00-1.50 m R = 0A PID = 1.6 ppm			CL	Sandy CLAY low plasticity, brown with orange pockets, fine sand			
				1.15								
				1.20				CI	CLAY high plasticity, dark brown to black, trace wood fragments			
				2.10				CH	CLAY high plasticity, dark brown to grey	M		
			1.5		J 1.50-2.00 m R = 0A PID = 0.5 ppm							
		17/12/15		1.75								
				1.55				SC	Clayey SAND fine to medium grained, grey			
			2.0		J 2.00-2.50 m R = 0A PID = 1.6 ppm							
				2.40						W		
				0.90				SP	SAND fine to medium grained, grey, with some clay			
			2.5		J 2.50-3.00 m R = 0A PID = 1.2 ppm							
			3.0	0.30					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.75 m DEPTH BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH17

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510320.0 m E 6968843.5 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.46 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 18/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	Groundwater not observed	0.0	2.46	PID = 2.4 ppm			CH	Sandy CLAY medium plasticity, brown, fine to medium sand	D		
				0.35 2.11					with some medium to coarse, angular gravel			
			0.5	0.60 1.86	J 0.50-1.00 m R = 0A PID = 2 ppm			CI	Sandy CLAY medium plasticity, brown/grey, fine to coarse sand, Sulphide/Sulphate odour			
				0.97 1.49				CH	CLAY high plasticity, grey, trace wood fragements up to 20 mm dia			
			1.0		J 1.00-1.50 m R = 0A							
			1.5		J 1.50-2.00 m R = 0B PID = 1.5 ppm					M		
			2.0		J 2.00-2.50 m R = 0B PID = 2.3 ppm							
			2.5		J 2.50-3.00 m R = 0A PID = 1.5 ppm							
			3.0	-0.54					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH19

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509999.2 m E 6968856.0 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.62 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
ADH	L	17/12/15	-1.0									0.61 m stick up PVC (Monument cover); 50 mm dia. PVC
			-0.5									
			-0.0	0.05 / 2.57	J 0.00-0.50 m R = 0A PID = 1 ppm			SM	Silty SAND fine to medium grained, brown, trace rootlets	D		Cement
								CL / CI	CLAY low to medium plasticity, dark brown, trace rootlets	D - M		Bentonite seal
			0.5	0.60 / 2.02	J 0.50-1.00 m R = 0A PID = 1.3 ppm				dark brown/ black lense 200 mm thick			
				0.80 / 1.82				CH	CLAY high plasticity, grey/brown, trace wood fragments	M		
			1.0		J 1.00-1.50 m R = 0A PID = 1.1 ppm							
				1.20 / 1.42				SP	SAND fine to medium grained, grey, trace rootlets up to 25 m dia.			
			1.5		J 1.50-2.00 m R = 0A PID = 1.3 ppm							Filter sand
			2.0		J 2.00-2.50 m R = 0A PID = 1.3 ppm					M - W		0.4 mm aperture slots
			2.5		J 2.50-3.00 m R = 0A PID = 0.2 ppm							
			3.0	-0.38					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 2.20 m DEPTH STANDPIPE INSTALLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			End cap
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH20

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509944 m E 6968798 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.5 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 1.80 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	Groundwater not observed	0.0	2.50	J 0.00-0.50 m R = 0A PID = 0.1 ppm			GW	Sandy GRAVEL fine to coarse grained, angular, brown, fine to medium sand	D		FILL
				0.30 2.20				CL-CI	CLAY low to medium plasticity, dark brown			NATURAL
			0.5		J 0.50-1.00 m R = 0A PID = 0.3 ppm							
				0.70 1.80					brown with orange pockets, with some fine gravel			
			1.0		J 1.00-1.50 m R = 0A PID = 0.3 ppm					D - M		
			1.5									
				0.70					END OF BOREHOLE @ 1.80 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH21

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509926 m E 6968761 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.5 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 1.80 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	Groundwater not observed	0.0	2.50	J 0.00-0.50 m R = 0A PID = 0.4 ppm			GW	Sandy GRAVEL fine to coarse grained, angular, fine to medium grained sand, trace rootlets			FILL
				0.25 / 2.25				CI	Sandy CLAY medium plasticity, brown, fine to medium grained sand	D		NATURAL
			0.5	0.60 / 1.90	J 0.50-1.00 m R = 0A PID = 0.5 ppm			CH	CLAY high plasticity, brown to grey with orange pockets			
				0.90 / 1.60				CI	Sandy CLAY medium plasticity, fine grained sand			
			1.0		J 1.00-1.50 m R = 0A PID = 0.5 ppm					M		
				1.40 / 1.10					pockets of red/orange			
			1.5	0.70					END OF BOREHOLE @ 1.80 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH22

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509904 m E 6968799 m N MGA94 56	DRILL RIG: Comacchio 305		
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.5 m DATUM: AD	CONTRACTOR: MGS		
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS	DATE: 17/12/15	
JOB NO:	1538021	HOLE DEPTH: 1.80 m	CHECKED: KRB	DATE: 21/1/16	

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	Groundwater not observed	0.0	2.50	J 0.00-0.50 m R = 0A PID = 0.3 ppm			SC	Clayey SAND fine to medium grained, brown, with some fine to coarse, subangular, up to 30 mm gravel, trace rootlets	D		FILL
			0.5		J 0.50-1.00 m R = 0A PID = 0.3 ppm							
				0.67 1.83				CH	CLAY high plasticity, dark brown, trace wood fragments to 1.3 m			NATURAL
			1.0		J 1.00-1.50 m R = 0A PID = 0.7 ppm					M		
				1.30 1.20					grey			
			1.5									
				0.70					END OF BOREHOLE @ 1.80 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH23

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509875 m E 6968821 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.5 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 1.80 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	17/12/15	0.0	2.50	J 0.00-0.50 m R = 0A PID = 0.4 ppm				BOULDERS	D		FILL
				0.20								
				2.30				CH	CLAY high plasticity, dark brown to grey	D - M		NATURAL
				0.45								
			0.5	2.05	J 0.50-1.00 m R = 0A PID = 0.7 ppm			CI	Sandy CLAY medium plasticity, grey, fine grained sand			
				0.60								
				1.87				CH	gravelly sand lense 30 mm thick CLAY high plasticity, dark brown to grey			
				0.83								
				1.67				CI	Sandy CLAY medium plasticity, grey with brown pockets, fine to medium grained sand			
			1.0		J 1.00-1.50 m R = 0A PID = 0.3 ppm					M		
			1.5									
				1.60								
				0.90				SP	SAND fine to medium grained, grey, with some clay lenses	W		
				0.70					END OF BOREHOLE @ 1.80 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.60 m DEPTH BACKFILLED CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH28

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510532.6 m E 6969155.6 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.74 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 18/12/15
JOB NO:	1538021	HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 21/1/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
			-1.0									0.59 m stick up PVC; 50 mm dia. PVC
			-0.5									
ADH	L		0.0	2.74	J 0.00-0.50 m R = 0A			SP	Silty SAND fine to medium grained, brown, trace rootlets up to 10 mm dia.	D		Cement
				0.30								
				2.44				CL	Sandy CLAY low plasticity, brown, fien to medium sand, trace rootlets			Bentonite seal
				0.45								
			0.5	2.29	J 0.50-1.00 m R = 0A PID = 0.4 ppm			CH	CLAY high plasticity, brown, trace rootlets	D - M		
				0.70								
				2.04				CH	CLAY high plasticity, dark brown			
			1.0		J 1.00-1.50 m R = 0A							
			1.5		J 1.50-2.00 m R = 0B PID = 0.5 ppm							Filter sand
				1.60								
				1.14					becoming grey, trace wood fragments up to 5 mm, Sulphide/Sulphate odour	M		
			2.0		J 2.00-2.50 m R = 0B							0.4 mm aperture slots
		18/12/15	2.5	2.50								
				0.24	J 2.50-3.00 m R = 0A PID = 0.4 ppm			SP	SAND fine to medium grained, grey, with some clay	W		
			3.0	-0.26					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 2.50 m DEPTH STANDPIPE INSTALLED ASS SAMPLES TAKEN AT 0.25 m INTERVALS TO 3.0 m. CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			End cap
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH30

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510351.3 m E 6969177.0 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.74 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 10/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	10/10/16	0.0	2.74	ASS 0.00-0.25 m R = 0A PID = 3.2 ppm			ML-MH	Clayey Sandy SILT medium liquid limit, brown, fine to medium sand, trace rootelts	D - M		NATURAL
				0.20 2.54	ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			CI-CH	Silty CLAY medium to high plasticity, grey brown, with some fine to medium grain sand, trace rootlets			
			0.5	0.40 2.34	ASS 0.50-0.75 m R = 0A PID = 3.9 ppm ASS 0.75-1.00 m R = 0A			CH	Silty CLAY high plasticity, dark grey			
			1.0	0.85 1.89	J 0.75-1.00 m R = 0A ASS 1.00-1.25 m R = 0A PID = 4.2 ppm			CH	Silty CLAY high plasticity, brown grey, with some fine to medium grain sand			
				1.15 1.59	ASS 1.25-1.50 m R = 0A				trace fine to medium sand from 1.15 m to 1.35 m			
			1.5	1.40 1.34	ASS 1.50-1.75 m R = 0A PID = 4 ppm ASS 1.75-2.00 m R = 0A J 1.75-2.00 m R = 0A				colour change to dark grey	M		
			2.0		ASS 2.00-2.25 m R = 0A PID = 3.4 ppm ASS 2.25-2.50 m R = 0A							
			2.5		ASS 2.50-2.75 m R = 0A PID = 4.4 ppm J 2.75-3.00 m R = 0A							
			3.0	-0.26					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH31/MW31

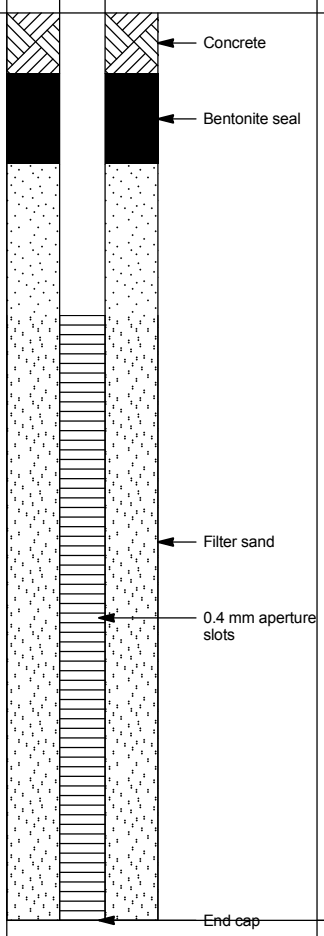
SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510224.5 m E 6969041.3 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.75 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 10/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION / CONSISTENCY / DENSITY
PT	L	25/10/16	-1.0							
			-0.5							
			0.0	2.75	ASS 0.00-0.25 m R = 1A			ML-MH	Clayey Sandy SILT medium liquid limit, brown, fine to medium sand, trace rootlets	
				0.10 / 2.65	PID = 2.8 ppm			CH	Silty CLAY medium to high plasticity, brown mottled orange, with some fine to medium grain sand	D - M
					ASS 0.25-0.50 m R = 1A J 0.25-0.50 m R = 1A					
			0.5	0.50 / 2.25	ASS 0.50-0.75 m R = 0A PID = 3.3 ppm			CH	CLAY high plasticity, dark grey	
					ASS 0.75-1.00 m R = 0A J 0.75-1.00 m R = 0A					
			1.0	0.95 / 1.00				CI	Sandy CLAY dark grey, fine to medium sand	
				1.75 / 1.10 / 1.65	ASS 1.00-1.25 m R = 0A PID = 3.6 ppm			SC		
								CH	Clayey SAND fine to medium grained, grey	
					ASS 1.25-1.50 m R = 0A				CLAY high plasticity, dark grey	M
			1.5		ASS 1.50-1.75 m R = 0A PID = 3.3 ppm					
					ASS 1.75-2.00 m R = 0A J 1.75-2.00 m R = 0A					
			2.0		ASS 2.00-2.25 m R = 0A PID = 3.1 ppm					
				2.35 / 0.40 / 2.45	ASS 2.25-2.50 m R = 0A				increasing fine to medium sand content	
			2.5	2.55 / 0.20 / 2.65 / 0.10	ASS 2.50-2.75 m R = 0A PID = 2.6 ppm			CI	Sandy CLAY medium plasticity, dark grey, fine to medium sand	
								SC	Clayey SAND fine to medium grained, dark grey	W
								SM	Silty SAND fine to medium grained, dark grey, with some low to medium plasticity clay	
					ASS 2.75-3.00 m R = 0A J 2.75-3.00 m R = 0A					
			3.0	-0.25					END OF BOREHOLE @ 3.00 m TARGET DEPTH STANDPIPE INSTALLED	
			3.5							
			4.0							

PIEZOMETER DETAILS



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REPORT OF BOREHOLE: AM-BH32

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510120.5 m E 6969060.4 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.64 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 10/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	10/10/16	0.0	2.64	ASS 0.00-0.25 m R = 0A PID = 2.6 ppm			ML-MH	Clayey Sandy SILT medium liquid limit, brown, fine to medium sand, trace rootlets	D - M		NATURAL
					ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A							
			0.5	0.50 2.14	ASS 0.50-0.75 m R = 0A PID = 2.3 ppm			CH	CLAY high plasticity, dark grey	M		
					ASS 0.75-1.00 m R = 0A J 0.75-1.00 m R = 0A							
			1.0		ASS 1.00-1.25 m R = 0A PID = 2.3 ppm							
				1.25 1.39 1.35 1.29	ASS 1.25-1.50 m R = 0A			CI CH	Sandy CLAY medium plasticity, dark grey, fine to medium sand, trace rootlets Silty CLAY high plasticity, dark grey	M - W		
			1.5		ASS 1.50-1.75 m R = 0A PID = 2.9 ppm							
				1.80 0.84	ASS 1.75-2.00 m R = 0A J 1.75-2.00 m R = 0A				trace rootlets from 1.8 m to 2.0 m			
			2.0		ASS 2.00-2.25 m R = 0A PID = 2.7 ppm							
					ASS 2.25-2.50 m R = 0A							
			2.5		ASS 2.50-2.75 m R = 0A PID = 2.6 ppm							
				2.70 -0.06 2.80 2.85 -0.21	ASS 2.75-3.00 m R = 0A J 2.75-3.00 m R = 0A			CI SC	Sandy CLAY medium plasticity, dark grey, fine to medium sand increasing sand content, fine to medium grain Clayey SAND fine to medium grained, grey, trace rootlets	W		
			3.0	-0.36					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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APPENDIX C

Laboratory Documents

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1538408**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015 16:00
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 08-Jan-2016 15:39
Site	: ----		
		No. of samples received	: 72
Quote number	: ----	No. of samples analysed	: 55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Shobhna Chandra	Metals Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- Due to a Laboratory Error analysis on sample EB1538408-030 (AM-BH02-2.75-3.00) could not be conducted.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- PFOS and PFOA results are reported as an aggregate of linear and branched isomers.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH01 0.00-0.25	AM-BH01 0.25-0.50	AM-BH01 0.50-0.75	AM-BH01 0.75-1.00	AM-BH01 1.00-1.25
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-001	EB1538408-002	EB1538408-003	EB1538408-004	EB1538408-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.5	4.2	4.2	4.0	4.0
pH (Fox)	----	0.1	pH Unit	2.4	2.4	2.4	2.4	2.4
Reaction Rate	----	1	-	3	2	2	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH01 1.25-1.50	AM-BH01 1.50-1.75	AM-BH01 1.75-2.00	AM-BH01 2.00-2.25	AM-BH01 2.25-2.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-006	EB1538408-007	EB1538408-008	EB1538408-009	EB1538408-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.0	4.2	4.7	6.2	6.6
pH (Fox)	----	0.1	pH Unit	2.2	2.3	2.6	1.9	1.9
Reaction Rate	----	1	-	2	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH01 2.50-2.75	AM-BH01 2.75-3.00	AM-BH01 0.00-0.50	AM-BH01 2.50-3.00	Q1
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-011	EB1538408-012	EB1538408-013	EB1538408-018	EB1538408-019
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.8	6.9	----	----	----
pH (Fox)	----	0.1	pH Unit	1.8	2.2	----	----	----
Reaction Rate	----	1	-	3	4	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	13.7	20.3	21.0
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	<0.0005
PFOA	335-67-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	<0.001	<0.001	<0.001
PFOSA	754-91-6	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	<0.001	<0.001	<0.001
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	<0.001	<0.001	<0.001
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	<0.001	<0.001	<0.001
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	<0.001	<0.001	<0.001
PFBS	375-73-5	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFHxS	355-46-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFDcS	67906-42-7	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFHxA	307-24-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFHpA	375-85-9	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFNA	375-95-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFDcA	335-76-2	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFUnA	2058-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFDoA	307-55-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFTriA	72629-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	<0.0002
PFTeA	376-06-7	0.001	mg/kg	----	----	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH02 0.00-0.25	AM-BH02 0.50-0.75	AM-BH02 0.75-1.00	AM-BH02 1.00-1.25	AM-BH02 1.25-1.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-020	EB1538408-021	EB1538408-022	EB1538408-023	EB1538408-024
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	5.2	4.6	4.6	5.7	6.0
pH (Fox)	----	0.1	pH Unit	2.9	2.7	2.4	2.9	3.8
Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH02 1.50-1.75	AM-BH02 1.75-2.00	AM-BH02 2.00-2.25	AM-BH02 2.25-2.50	AM-BH02 2.50-2.75
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-025	EB1538408-026	EB1538408-027	EB1538408-028	EB1538408-029
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.5	6.8	6.6	6.6	6.6
pH (Fox)	----	0.1	pH Unit	2.1	2.0	2.1	2.1	1.9
Reaction Rate	----	1	-	3	4	4	4	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH02 0.00-0.50	AM-BH02 1.00-1.50	AM-BH03 0.00-0.25	AM-BH03 0.25-0.50	AM-BH03 0.50-0.75
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-031	EB1538408-033	EB1538408-037	EB1538408-038	EB1538408-039
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	----	5.3	4.3	4.2
pH (Fox)	----	0.1	pH Unit	----	----	2.9	2.3	1.9
Reaction Rate	----	1	-	----	----	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	36.6	37.2	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	<0.001	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	----	----	----
PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH03 0.75-1.00	AM-BH03 1.00-1.25	AM-BH03 1.25-1.50	AM-BH03 1.50-1.75	AM-BH03 1.75-2.00
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-040	EB1538408-041	EB1538408-042	EB1538408-043	EB1538408-044
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.2	4.4	4.3	4.6	5.8
pH (Fox)	----	0.1	pH Unit	2.3	2.4	2.4	2.7	2.7
Reaction Rate	----	1	-	2	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH03 2.00-2.25	AM-BH03 2.25-2.50	AM-BH03 2.50-2.75	AM-BH03 2.75-3.00	AM-BH03 0.00-0.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-045	EB1538408-046	EB1538408-047	EB1538408-048	EB1538408-049
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.0	6.3	6.4	6.5	----
pH (Fox)	----	0.1	pH Unit	1.8	2.1	2.2	2.2	----
Reaction Rate	----	1	-	3	4	4	4	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	13.8
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	<0.0005
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	<0.005
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	<0.001
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	<0.001
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	<0.001
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	<0.001
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	<0.001
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH03 1.00-1.50	AM-BH04 0.00-0.25	AM-BH04 0.25-0.50	AM-BH04 0.50-0.75	AM-BH04 0.75-1.00
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-051	EB1538408-055	EB1538408-056	EB1538408-057	EB1538408-058
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	4.2	4.0	3.9	4.0
pH (Fox)	----	0.1	pH Unit	----	1.9	2.0	2.0	2.1
Reaction Rate	----	1	-	----	3	3	3	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	25.5	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	<0.0005	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH04 1.00-1.25	AM-BH04 1.25-1.50	AM-BH04 1.50-1.75	AM-BH04 1.75-2.00	AM-BH04 2.00-2.25
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-059	EB1538408-060	EB1538408-061	EB1538408-062	EB1538408-063
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.0	4.1	4.2	6.1	6.1
pH (Fox)	----	0.1	pH Unit	2.3	2.3	2.1	2.4	2.3
Reaction Rate	----	1	-	2	2	2	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH04 2.25-2.50	AM-BH04 2.50-2.75	AM-BH04 2.75-3.00	AM-BH04 0.00-0.50	AM-BH04 0.50-1.00
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538408-064	EB1538408-065	EB1538408-066	EB1538408-067	EB1538408-068
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**6.2**	**6.7**	**7.0**	**----**	**----**
pH (Fox)	----	0.1	pH Unit	**2.5**	**2.5**	**2.2**	**----**	**----**
Reaction Rate	----	1	-	**4**	**4**	**4**	**----**	**----**
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	**----**	**----**	**----**	**24.4**	**17.9**
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	**----**	**----**	**----**	<0.0005	<0.0005
PFOA	335-67-1	0.0005	mg/kg	**----**	**----**	**----**	<0.0005	<0.0005
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	**----**	**----**	**----**	<0.005	<0.005
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	**----**	**----**	**----**	<0.001	<0.001
PFOSA	754-91-6	0.0002	mg/kg	**----**	**----**	**----**	<0.0002	<0.0002
N-Me-FOSA	31506-32-8	0.001	mg/kg	**----**	**----**	**----**	<0.001	<0.001
N-Et-FOSA	4151-50-2	0.001	mg/kg	**----**	**----**	**----**	<0.001	<0.001
N-Me-FOSE	2448-09-7	0.001	mg/kg	**----**	**----**	**----**	<0.001	<0.001
N-Et-FOSE	1691-99-2	0.001	mg/kg	**----**	**----**	**----**	<0.001	<0.001
PFBS	375-73-5	0.0002	mg/kg	**----**	**----**	**----**	<0.0002	<0.0002
PFHxS	355-46-4	0.0002	mg/kg	**----**	**----**	**----**	<0.0002	<0.0002
PFDcS	67906-42-7	0.0002	mg/kg	**----**	**----**	**----**	<0.0002	<0.0002
PFHxA	307-24-4	0.0002	mg/kg	**----**	**----**	**----**	<0.0002	<0.0002
PFHpA	375-85-9	0.0002	mg/kg	**----**	**----**	**----**	<0.0002	<0.0002
PFNA	375-95-1	0.0002	mg/kg	**----**	**----**	**----**	<0.0002	<0.0002
PFDcA	335-76-2	0.0002	mg/kg	**----**	**----**	**----**	<0.0002	<0.0002
PFUnA	2058-94-8	0.0002	mg/kg	**----**	**----**	**----**	<0.0002	<0.0002
PFDoA	307-55-1	0.0002	mg/kg	**----**	**----**	**----**	<0.0002	<0.0002
PFTriA	72629-94-8	0.0002	mg/kg	**----**	**----**	**----**	<0.0002	<0.0002
PFTeA	376-06-7	0.001	mg/kg	**----**	**----**	**----**	<0.001	<0.001

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1538408**	Page	: 1 of 8
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 08-Jan-2016
Site	: ----	No. of samples received	: 72
Quote number	: ----	No. of samples analysed	: 55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Shobhna Chandra	Metals Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA037: Ass Field Screening Analysis (QC Lot: 318589)									
EB1538408-001	AM-BH01 0.00-0.25	EA037: pH (F)	----	0.1	pH Unit	4.5	4.5	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.4	2.3	4.26	0% - 20%
EB1538408-011	AM-BH01 2.50-2.75	EA037: pH (F)	----	0.1	pH Unit	6.8	6.7	1.48	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	1.8	1.9	5.40	0% - 50%
EA037: Ass Field Screening Analysis (QC Lot: 318590)									
EB1538408-028	AM-BH02 2.25-2.50	EA037: pH (F)	----	0.1	pH Unit	6.6	6.7	1.50	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.1	2.1	0.00	0% - 20%
EB1538408-044	AM-BH03 1.75-2.00	EA037: pH (F)	----	0.1	pH Unit	5.8	5.9	1.71	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.7	2.8	3.64	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 318591)									
EB1538408-060	AM-BH04 1.25-1.50	EA037: pH (F)	----	0.1	pH Unit	4.1	4.1	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.3	2.4	4.26	0% - 20%
EA055: Moisture Content (QC Lot: 319728)									
EB1538408-068	AM-BH04 0.50-1.00	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	17.9	17.1	4.82	0% - 50%
EA055: Moisture Content (QC Lot: 320540)									
ES1539443-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	<1.0	<1.0	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319989)									
EB1538415-036	Anonymous	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1538408-013	AM-BH01 0.00-0.50	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231: Perfluorinated Compounds (QC Lot: 319989) - continued									
EB1538408-013	AM-BH01 0.00-0.50	EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319990)									
EB1538415-036	Anonymous	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
EB1538408-013	AM-BH01 0.00-0.50	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 321095)									
EB1538408-049	AM-BH03 0.00-0.50	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 321096)									
EB1538408-049	AM-BH03 0.00-0.50	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231: Perfluorinated Compounds (QC Lot: 321096) - continued									
EB1538408-049	AM-BH03 0.00-0.50	EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231: Perfluorinated Compounds (QCLot: 319989)								
EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	0.00625 mg/kg	82.6	50	130
EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	0.00625 mg/kg	73.0	30	130
EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	0.00625 mg/kg	110	50	130
EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	0.00625 mg/kg	118	30	130
EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.5	50	130
EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	50	130
EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.7	50	130
EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.9	50	130
EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	50	130
EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	36	130
EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	50	130
EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.3	50	130
EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	0.00625 mg/kg	73.7	30	130
EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.6	30	130
EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)								
EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	0.00625 mg/kg	122	56	138
EP231: 8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.8	54	134
EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	54	146
EP231: Perfluorinated Compounds (QCLot: 321095)								
EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	0.00625 mg/kg	80.6	50	130
EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	0.00625 mg/kg	99.5	30	130
EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	0.00625 mg/kg	107	50	130
EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	0.00625 mg/kg	128	30	130
EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	68.4	50	130
EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	50	130
EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	50	130
EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	50	130
EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	50	130
EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	36	130
EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.8	50	130
EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	50	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231: Perfluorinated Compounds (QCLot: 321095) - continued								
EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.1	50	130
EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	0.00625 mg/kg	72.7	30	130
EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.2	30	130
EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	50	130
EP231: Perfluorinated Compounds (QCLot: 321096)								
EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	0.00625 mg/kg	105	56	138
EP231: 8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	100	54	134
EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	111	54	146

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231: Perfluorinated Compounds (QCLot: 319989)							
EB1538408-013	AM-BH01 0.00-0.50	EP231-PFC: N-Et-FOSA	4151-50-2	0.00625 mg/kg	116	50	130
		EP231-PFC: N-Et-FOSE	1691-99-2	0.00625 mg/kg	114	30	130
		EP231-PFC: N-Me-FOSA	31506-32-8	0.00625 mg/kg	127	50	130
		EP231-PFC: N-Me-FOSE	2448-09-7	0.00625 mg/kg	106	30	130
		EP231-PFC: PFBS	375-73-5	0.00125 mg/kg	103	50	130
		EP231-PFC: PFDcA	335-76-2	0.00125 mg/kg	69.2	50	130
		EP231-PFC: PFDcS	67906-42-7	0.00125 mg/kg	67.7	50	130
		EP231-PFC: PFDoA	307-55-1	0.00125 mg/kg	113	50	130
		EP231-PFC: PFHpA	375-85-9	0.00125 mg/kg	101	50	130
		EP231-PFC: PFHxA	307-24-4	0.00125 mg/kg	79.3	30	130
		EP231-PFC: PFHxS	355-46-4	0.00125 mg/kg	106	50	130
		EP231-PFC: PFNA	375-95-1	0.00125 mg/kg	81.3	50	130
		EP231-PFC: PFOSA	754-91-6	0.00125 mg/kg	71.7	50	130
		EP231-PFC: PFTeA	376-06-7	0.00625 mg/kg	65.5	30	130
		EP231-PFC: PFTriA	72629-94-8	0.00125 mg/kg	114	30	130
		EP231-PFC: PFUnA	2058-94-8	0.00125 mg/kg	123	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)							
EB1538408-013	AM-BH01 0.00-0.50	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.00625 mg/kg	131	56	138
		EP231: PFOA	335-67-1	0.00125 mg/kg	100	54	134
		EP231: PFOS	1763-23-1	0.00125 mg/kg	107	54	146

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP231: Perfluorinated Compounds (QCLot: 321095)							
EB1538408-049	AM-BH03 0.00-0.50	EP231-PFC: N-Et-FOSA	4151-50-2	0.00625 mg/kg	121	50	130
		EP231-PFC: N-Et-FOSE	1691-99-2	0.00625 mg/kg	104	30	130
		EP231-PFC: N-Me-FOSA	31506-32-8	0.00625 mg/kg	108	50	130
		EP231-PFC: N-Me-FOSE	2448-09-7	0.00625 mg/kg	107	30	130
		EP231-PFC: PFBS	375-73-5	0.00125 mg/kg	71.7	50	130
		EP231-PFC: PFDcA	335-76-2	0.00125 mg/kg	80.2	50	130
		EP231-PFC: PFDcS	67906-42-7	0.00125 mg/kg	83.8	50	130
		EP231-PFC: PFDoA	307-55-1	0.00125 mg/kg	80.9	50	130
		EP231-PFC: PFHpA	375-85-9	0.00125 mg/kg	97.8	50	130
		EP231-PFC: PFHxA	307-24-4	0.00125 mg/kg	74.0	30	130
		EP231-PFC: PFHxS	355-46-4	0.00125 mg/kg	77.7	50	130
		EP231-PFC: PFNA	375-95-1	0.00125 mg/kg	110	50	130
		EP231-PFC: PFOSA	754-91-6	0.00125 mg/kg	66.3	50	130
		EP231-PFC: PFTeA	376-06-7	0.00625 mg/kg	68.0	30	130
		EP231-PFC: PFTriA	72629-94-8	0.00125 mg/kg	86.6	30	130
		EP231-PFC: PFUnA	2058-94-8	0.00125 mg/kg	115	50	130
EP231: Perfluorinated Compounds (QCLot: 321096)							
EB1538408-049	AM-BH03 0.00-0.50	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.00625 mg/kg	117	56	138
		EP231: PFOA	335-67-1	0.00125 mg/kg	104	54	134
		EP231: PFOS	1763-23-1	0.00125 mg/kg	108	54	146

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1538408**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61-7-3243 7222
Project	: 1538021	Date Samples Received	: 18-Dec-2015
Site	: ----	Issue Date	: 08-Jan-2016
Sampler	: TAMARA SICCAMA	No. of samples received	: 72
Order number	: 1538021	No. of samples analysed	: 55

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Moisture Content	2	24	8.33	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH01 0.00-0.25,	AM-BH01 0.25-0.50,	**16-Dec-2015**	**31-Dec-2015**	13-Jun-2016	✓	**31-Dec-2015**	13-Jun-2016	✓
AM-BH01 0.50-0.75,	AM-BH01 0.75-1.00,							
AM-BH01 1.00-1.25,	AM-BH01 1.25-1.50,							
AM-BH01 1.50-1.75,	AM-BH01 1.75-2.00,							
AM-BH01 2.00-2.25,	AM-BH01 2.25-2.50,							
AM-BH01 2.50-2.75,	AM-BH01 2.75-3.00,							
AM-BH02 0.00-0.25,	AM-BH02 0.50-0.75,							
AM-BH02 0.75-1.00,	AM-BH02 1.00-1.25,							
AM-BH02 1.25-1.50,	AM-BH02 1.50-1.75,							
AM-BH02 1.75-2.00,	AM-BH02 2.00-2.25,							
AM-BH02 2.25-2.50,	AM-BH02 2.50-2.75,							
AM-BH03 0.00-0.25,	AM-BH03 0.25-0.50,							
AM-BH03 0.50-0.75,	AM-BH03 0.75-1.00,							
AM-BH03 1.00-1.25,	AM-BH03 1.25-1.50,							
AM-BH03 1.50-1.75,	AM-BH03 1.75-2.00,							
AM-BH03 2.00-2.25,	AM-BH03 2.25-2.50,							
AM-BH03 2.50-2.75,	AM-BH03 2.75-3.00,							
AM-BH04 0.00-0.25,	AM-BH04 0.25-0.50,							
AM-BH04 0.50-0.75,	AM-BH04 0.75-1.00,							
AM-BH04 1.00-1.25,	AM-BH04 1.25-1.50,							
AM-BH04 1.50-1.75,	AM-BH04 1.75-2.00,							
AM-BH04 2.00-2.25,	AM-BH04 2.25-2.50,							
AM-BH04 2.50-2.75,	AM-BH04 2.75-3.00							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH01 0.00-0.50, Q1, AM-BH02 1.00-1.50, AM-BH04 0.50-1.00	AM-BH01 2.50-3.00, AM-BH02 0.00-0.50, AM-BH04 0.00-0.50,	**16-Dec-2015**	**----**	----	----	**23-Dec-2015**	30-Dec-2015	✓
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH03 0.00-0.50,	AM-BH03 1.00-1.50	**16-Dec-2015**	**----**	----	----	**24-Dec-2015**	30-Dec-2015	✓
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231)								
AM-BH01 0.00-0.50, Q1, AM-BH02 1.00-1.50, AM-BH04 0.50-1.00	AM-BH01 2.50-3.00, AM-BH02 0.00-0.50, AM-BH04 0.00-0.50,	**16-Dec-2015**	**24-Dec-2015**	13-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
Soil Glass Jar - Unpreserved (EP231)								
AM-BH03 0.00-0.50,	AM-BH03 1.00-1.50	**16-Dec-2015**	**30-Dec-2015**	13-Jun-2016	✓	**30-Dec-2015**	08-Feb-2016	✓
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231-PFC)								
AM-BH01 0.00-0.50, Q1, AM-BH02 1.00-1.50, AM-BH04 0.50-1.00	AM-BH01 2.50-3.00, AM-BH02 0.00-0.50, AM-BH04 0.00-0.50,	**16-Dec-2015**	**24-Dec-2015**	13-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
Soil Glass Jar - Unpreserved (EP231-PFC)								
AM-BH03 0.00-0.50,	AM-BH03 1.00-1.50	**16-Dec-2015**	**30-Dec-2015**	13-Jun-2016	✓	**30-Dec-2015**	08-Feb-2016	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	5	46	**10.87**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	2	24	**8.33**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	3	22	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	3	22	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	22	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	SOIL	In-House. A portion of soil is soaked in sodium hydroxide followed by extraction with methanol. The extract is neutralised with HCl and an aliquot taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.
Perfluorinated Compounds by LCMSMS	EP231-PFC	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Drying only	EN020D	SOIL	In House

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1538408**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 4
Order number	: 1538021	Quote number	: EM2015GOLASS0592 (EN-002-15)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: TAMARA SICCAMA		

Dates

Date Samples Received	: 18-Dec-2015 4:00 PM	Issue Date	: 22-Dec-2015
Client Requested Due Date	: 04-Jan-2016	Scheduled Reporting Date	: **04-Jan-2016**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 6	Temperature	: 6.3, 8.2, 9.1, 0.9, 3.2, 3.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 72 / 56

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFOS/PFOA analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The expected due date for this data is 11/01/2015.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS
EB1538408-001	[16-Dec-2015]	AM-BH01 0.00-0.25		✓		
EB1538408-002	[16-Dec-2015]	AM-BH01 0.25-0.50		✓		
EB1538408-003	[16-Dec-2015]	AM-BH01 0.50-0.75		✓		
EB1538408-004	[16-Dec-2015]	AM-BH01 0.75-1.00		✓		
EB1538408-005	[16-Dec-2015]	AM-BH01 1.00-1.25		✓		
EB1538408-006	[16-Dec-2015]	AM-BH01 1.25-1.50		✓		
EB1538408-007	[16-Dec-2015]	AM-BH01 1.50-1.75		✓		
EB1538408-008	[16-Dec-2015]	AM-BH01 1.75-2.00		✓		
EB1538408-009	[16-Dec-2015]	AM-BH01 2.00-2.25		✓		
EB1538408-010	[16-Dec-2015]	AM-BH01 2.25-2.50		✓		
EB1538408-011	[16-Dec-2015]	AM-BH01 2.50-2.75		✓		
EB1538408-012	[16-Dec-2015]	AM-BH01 2.75-3.00		✓		
EB1538408-013	[16-Dec-2015]	AM-BH01 0.00-0.50			✓	✓
EB1538408-014	[16-Dec-2015]	AM-BH01 0.50-1.00	✓			
EB1538408-015	[16-Dec-2015]	AM-BH01 1.00-1.50	✓			
EB1538408-016	[16-Dec-2015]	AM-BH01 1.50-2.00	✓			
EB1538408-017	[16-Dec-2015]	AM-BH01 2.00-2.50	✓			
EB1538408-018	[16-Dec-2015]	AM-BH01 2.50-3.00			✓	✓
EB1538408-019	[16-Dec-2015]	Q1			✓	✓
EB1538408-020	[16-Dec-2015]	AM-BH02 0.00-0.25		✓		
EB1538408-021	[16-Dec-2015]	AM-BH02 0.50-0.75		✓		
EB1538408-022	[16-Dec-2015]	AM-BH02 0.75-1.00		✓		
EB1538408-023	[16-Dec-2015]	AM-BH02 1.00-1.25		✓		
EB1538408-024	[16-Dec-2015]	AM-BH02 1.25-1.50		✓		
EB1538408-025	[16-Dec-2015]	AM-BH02 1.50-1.75		✓		
EB1538408-026	[16-Dec-2015]	AM-BH02 1.75-2.00		✓		
EB1538408-027	[16-Dec-2015]	AM-BH02 2.00-2.25		✓		
EB1538408-028	[16-Dec-2015]	AM-BH02 2.25-2.50		✓		
EB1538408-029	[16-Dec-2015]	AM-BH02 2.50-2.75		✓		
EB1538408-030	[16-Dec-2015]	AM-BH02 2.75-3.00		✓		
EB1538408-031	[16-Dec-2015]	AM-BH02 0.00-0.50			✓	✓
EB1538408-032	[16-Dec-2015]	AM-BH02 0.50-1.00	✓			
EB1538408-033	[16-Dec-2015]	AM-BH02 1.00-1.50			✓	✓
EB1538408-034	[16-Dec-2015]	AM-BH02 1.50-2.00	✓			
EB1538408-035	[16-Dec-2015]	AM-BH02 2.00-2.50	✓			

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS
EB1538408-036	[16-Dec-2015]	AM-BH02 2.50-3.00	✓			
EB1538408-037	[16-Dec-2015]	AM-BH03 0.00-0.25		✓		
EB1538408-038	[16-Dec-2015]	AM-BH03 0.25-0.50		✓		
EB1538408-039	[16-Dec-2015]	AM-BH03 0.50-0.75		✓		
EB1538408-040	[16-Dec-2015]	AM-BH03 0.75-1.00		✓		
EB1538408-041	[16-Dec-2015]	AM-BH03 1.00-1.25		✓		
EB1538408-042	[16-Dec-2015]	AM-BH03 1.25-1.50		✓		
EB1538408-043	[16-Dec-2015]	AM-BH03 1.50-1.75		✓		
EB1538408-044	[16-Dec-2015]	AM-BH03 1.75-2.00		✓		
EB1538408-045	[16-Dec-2015]	AM-BH03 2.00-2.25		✓		
EB1538408-046	[16-Dec-2015]	AM-BH03 2.25-2.50		✓		
EB1538408-047	[16-Dec-2015]	AM-BH03 2.50-2.75		✓		
EB1538408-048	[16-Dec-2015]	AM-BH03 2.75-3.00		✓		
EB1538408-049	[16-Dec-2015]	AM-BH03 0.00-0.50			✓	✓
EB1538408-050	[16-Dec-2015]	AM-BH03 0.50-1.00	✓			
EB1538408-051	[16-Dec-2015]	AM-BH03 1.00-1.50			✓	✓
EB1538408-052	[16-Dec-2015]	AM-BH03 1.50-2.00	✓			
EB1538408-053	[16-Dec-2015]	AM-BH03 2.00-2.50	✓			
EB1538408-054	[16-Dec-2015]	AM-BH03 2.50-3.00	✓			
EB1538408-055	[16-Dec-2015]	AM-BH04 0.00-0.25		✓		
EB1538408-056	[16-Dec-2015]	AM-BH04 0.25-0.50		✓		
EB1538408-057	[16-Dec-2015]	AM-BH04 0.50-0.75		✓		
EB1538408-058	[16-Dec-2015]	AM-BH04 0.75-1.00		✓		
EB1538408-059	[16-Dec-2015]	AM-BH04 1.00-1.25		✓		
EB1538408-060	[16-Dec-2015]	AM-BH04 1.25-1.50		✓		
EB1538408-061	[16-Dec-2015]	AM-BH04 1.50-1.75		✓		
EB1538408-062	[16-Dec-2015]	AM-BH04 1.75-2.00		✓		
EB1538408-063	[16-Dec-2015]	AM-BH04 2.00-2.25		✓		
EB1538408-064	[16-Dec-2015]	AM-BH04 2.25-2.50		✓		
EB1538408-065	[16-Dec-2015]	AM-BH04 2.50-2.75		✓		
EB1538408-066	[16-Dec-2015]	AM-BH04 2.75-3.00		✓		
EB1538408-067	[16-Dec-2015]	AM-BH04 0.00-0.50			✓	✓
EB1538408-068	[16-Dec-2015]	AM-BH04 0.50-1.00			✓	✓
EB1538408-069	[16-Dec-2015]	AM-BH04 1.00-1.50	✓			
EB1538408-070	[16-Dec-2015]	AM-BH04 1.50-2.00	✓			
EB1538408-071	[16-Dec-2015]	AM-BH04 2.00-2.50	✓			
EB1538408-072	[16-Dec-2015]	AM-BH04 2.50-3.00	✓			

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	kbiram@golder.com.au

TAMARA SICCAMA

- *AU Certificate of Analysis - NATA (COA)	Email	TSiccama@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	TSiccama@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	TSiccama@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	TSiccama@golder.com.au
- Chain of Custody (CoC) (COC)	Email	TSiccama@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	TSiccama@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	TSiccama@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	TSiccama@golder.com.au

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	HARD	FAX	DISK	EMAIL	BULLETIN BOARD
Email Format:	PDF	Excel	Other	Email Addr	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystal-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
1	AM-BH01	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
2	AM-BH01	0.25	0.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
3	AM-BH01	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
4	AM-BH01	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
5	AM-BH01	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
6	AM-BH01	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
7	AM-BH01	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
8	AM-BH01	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
9	AM-BH01	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
10	AM-BH01	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
11	AM-BH01	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
12	AM-BH01	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
13	AM-BH01	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
14	AM-BH01	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
15	AM-BH01	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
16	AM-BH01	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
17	AM-BH01	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
18	AM-BH01	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N				x	
19	Q1			Soil	16/12/2015		Jar	Chilled	1	N				x	

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other
SAMPLE TYPE = Core(CR)
HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list
Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — **LAB. BATCH NUMBER**

Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

SCANNED

Environmental Division
Brisbane
Work Order Reference
EB1538408

Telephone : + 61-7-3243 7222

SPLIT BATCH
Test Split due to no. of samples
Assoc. Batch No.
EB1538415 & EB1538419

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD**	**FAX** **DISK** **EMAIL**	**BULLETIN BOARD**
Email Format:	**PDF**	**Excel** **Other** **Email Add**	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystal-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
20	AM-BH02	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
	~~AM-BH02~~	~~0.25~~	~~0.50~~	~~Soil~~	~~16/12/2015~~		~~Bag~~	~~Frozen~~	~~1~~	~~N~~		~~x~~	~~x~~		
21	AM-BH02	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
22	AM-BH02	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
23	AM-BH02	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
24	AM-BH02	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
25	AM-BH02	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
26	AM-BH02	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
27	AM-BH02	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
28	AM-BH02	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
29	AM-BH02	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
30	AM-BH02	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
31	AM-BH02	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
32	AM-BH02	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
33	AM-BH02	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
34	AM-BH02	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
35	AM-BH02	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
36	AM-BH02	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N	x				

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory				**LAB. BATCH NUMBER**	
Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days):	**5**	**BY:**	
Report Format:	**HARD** **FAX** **DISK** **EMAIL** **BULLETIN BOARD**		
Email Format:	**PDF** **Excel** **Other** **Email Add:** tsiccama@golder.com.au		

GOLDER ASSOCIATES PTY LTD
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Comments/Special Instructions:

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ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
37	AM-BH03	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
38	AM-BH03	0.25	0.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
39	AM-BH03	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
40	AM-BH03	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
41	AM-BH03	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
42	AM-BH03	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
43	AM-BH03	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
44	AM-BH03	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
45	AM-BH03	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
46	AM-BH03	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
47	AM-BH03	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
48	AM-BH03	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
49	AM-BH03	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
50	AM-BH03	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
51	AM-BH03	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
52	AM-BH03	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
53	AM-BH03	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
54	AM-BH03	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N	x				

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE = Core(CR)** **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

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	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		**Chilled**		**LAB. BATCH NUMBER**	
Suitable Containers		**Frozen**		**Bill to:**	
Cool Box		**Ambient**		**Address**	

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	

Report Format: HARD FAX DISK EMAIL BULLETIN BOARD

Email Format: PDF Excel Other Email Add: tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
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ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pH/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
56	AM-BH04	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
57	AM-BH04	0.25	0.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
58	AM-BH04	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
59	AM-BH04	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
60	AM-BH04	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
61	AM-BH04	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
62	AM-BH04	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
63	AM-BH04	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
64	AM-BH04	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
65	AM-BH04	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
66	AM-BH04	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
67	AM-BH04	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
68	AM-BH04	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N				x	
69	AM-BH04	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N				x	
70	AM-BH04	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
71	AM-BH04	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
72	AM-BH04	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
	AM-BH04	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N	x				

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory				**LAB. BATCH NUMBER**	
Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1538415**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015 16:00
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 12-Jan-2016 12:51
Site	: ----		
		No. of samples received	: 70
Quote number	: ----	No. of samples analysed	: 55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Nanthini Coilparampi	Laboratory Manager - Inorganics	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- PFOS and PFOA results are reported as an aggregate of linear and branched isomers.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH05 0.00-0.25	AM-BH05 0.25-0.50	AM-BH05 0.50-0.75	AM-BH05 0.75-1.00	AM-BH05 1.00-1.25
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-001	EB1538415-002	EB1538415-003	EB1538415-004	EB1538415-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.7	5.8	4.9	4.1	3.9
pH (Fox)	----	0.1	pH Unit	2.6	3.4	2.9	2.4	2.4
Reaction Rate	----	1	-	3	2	2	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH05 1.25-1.50	AM-BH05 1.50-1.75	AM-BH05 1.75-2.00	AM-BH05 2.00-2.25	AM-BH05 2.25-2.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-006	EB1538415-007	EB1538415-008	EB1538415-009	EB1538415-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.0	4.4	5.3	5.2	5.8
pH (Fox)	----	0.1	pH Unit	2.3	3.0	2.6	2.4	1.9
Reaction Rate	----	1	-	2	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH05 2.50-2.75	AM-BH05 2.75-3.00	AM-BH05 0.50-1.00	AM-BH05 2.50-3.00	AM-BH06 0.00-0.25
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-011	EB1538415-012	EB1538415-014	EB1538415-018	EB1538415-019
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.3	6.6	----	----	4.8
pH (Fox)	----	0.1	pH Unit	2.0	2.2	----	----	2.4
Reaction Rate	----	1	-	4	4	----	----	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	26.6	24.7	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
PFOA	335-67-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	<0.005	<0.005	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	<0.001	<0.001	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	<0.001	<0.001	----
PFBS	375-73-5	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFNA	375-95-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTeA	376-06-7	0.001	mg/kg	----	----	<0.001	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH06 0.25-0.50	AM-BH06 0.50-0.75	AM-BH06 0.75-1.00	AM-BH06 1.00-1.25	AM-BH06 1.25-1.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-020	EB1538415-021	EB1538415-022	EB1538415-023	EB1538415-024
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.3	4.3	4.3	4.2	4.1
pH (Fox)	----	0.1	pH Unit	2.4	2.4	2.2	2.3	2.4
Reaction Rate	----	1	-	3	2	2	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH06 1.50-1.75	AM-BH06 1.75-2.00	AM-BH06 2.00-2.25	AM-BH06 2.25-2.50	AM-BH06 2.50-2.75
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-025	EB1538415-026	EB1538415-027	EB1538415-028	EB1538415-029
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.7	5.5	6.1	6.2	6.8
pH (Fox)	----	0.1	pH Unit	2.6	2.6	1.7	1.6	1.9
Reaction Rate	----	1	-	2	2	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH06 2.75-3.00	AM-BH06 0.50-1.00	AM-BH06 2.50-3.00	AM-BH07 0.00-0.25	AM-BH07 0.50-0.75
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-030	EB1538415-032	EB1538415-036	EB1538415-037	EB1538415-038
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	7.0	----	----	6.4	4.2
pH (Fox)	----	0.1	pH Unit	2.0	----	----	3.2	2.2
Reaction Rate	----	1	-	4	----	----	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	26.9	41.5	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	<0.0005	<0.0005	----	----
PFOA	335-67-1	0.0005	mg/kg	----	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	<0.005	<0.005	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	<0.001	<0.001	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	<0.001	<0.001	----	----
PFBS	375-73-5	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFNA	375-95-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFTeA	376-06-7	0.001	mg/kg	----	<0.001	<0.001	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH07 0.75-1.00	AM-BH07 1.00-1.25	AM-BH07 1.25-1.50	AM-BH07 1.50-1.75	AM-BH07 1.75-2.00
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-039	EB1538415-040	EB1538415-041	EB1538415-042	EB1538415-043
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	3.9	4.6	4.6	5.9	6.2
pH (Fox)	----	0.1	pH Unit	2.0	3.0	2.6	2.9	2.3
Reaction Rate	----	1	-	3	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH07 2.00-2.25	AM-BH07 2.25-2.50	AM-BH07 2.50-2.75	AM-BH07 2.75-3.00	AM-BH07 0.00-0.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-044	EB1538415-045	EB1538415-046	EB1538415-047	EB1538415-048
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.3	6.8	7.0	7.2	----
pH (Fox)	----	0.1	pH Unit	1.4	1.8	1.8	1.9	----
Reaction Rate	----	1	-	4	4	4	4	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	8.4
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	<0.0005
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	<0.005
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	<0.001
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	<0.001
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	<0.001
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	<0.001
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	<0.001
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH07 1.50-2.00	AM-BH08 0.00-0.25	AM-BH08 0.25-0.50	AM-BH08 0.50-0.75	AM-BH08 0.75-1.00
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-050	EB1538415-053	EB1538415-054	EB1538415-055	EB1538415-056
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	7.0	5.9	4.3	3.9
pH (Fox)	----	0.1	pH Unit	----	5.5	3.2	2.3	2.1
Reaction Rate	----	1	-	----	2	3	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	42.5	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	<0.0005	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH08 1.00-1.25	AM-BH08 1.25-1.50	AM-BH08 1.50-1.75	AM-BH08 1.75-2.00	AM-BH08 2.00-2.25
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-057	EB1538415-058	EB1538415-059	EB1538415-060	EB1538415-061
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.2	5.2	4.9	6.2	6.5
pH (Fox)	----	0.1	pH Unit	2.4	2.6	2.5	1.4	1.8
Reaction Rate	----	1	-	2	3	2	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH08 2.25-2.50	AM-BH08 2.50-2.75	AM-BH08 2.75-3.00	AM-BH08 0.00-0.50	AM-BH08 1.00-1.50
			Client sampling date / time	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]	[16-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538415-062	EB1538415-063	EB1538415-064	EB1538415-065	EB1538415-067
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.9	7.6	7.0	----	----
pH (Fox)	----	0.1	pH Unit	1.8	1.6	1.5	----	----
Reaction Rate	----	1	-	4	4	4	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	12.1	33.2
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
PFOA	335-67-1	0.0005	mg/kg	----	----	----	<0.0005	<0.0005
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	<0.005	<0.005
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	<0.001	<0.001
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	<0.001	<0.001
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	<0.001	<0.001
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	<0.001	<0.001
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	<0.001	<0.001
PFBS	375-73-5	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFNA	375-95-1	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	<0.0002	<0.0002
PFTeA	376-06-7	0.001	mg/kg	----	----	----	<0.001	<0.001

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1538415**	Page	: 1 of 6
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 12-Jan-2016
Site	: ----	No. of samples received	: 70
Quote number	: ----	No. of samples analysed	: 55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Nanthini Coilparampi	Laboratory Manager - Inorganics	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA037: Ass Field Screening Analysis (QC Lot: 318592)									
EB1538415-001	AM-BH05 0.00-0.25	EA037: pH (F)	----	0.1	pH Unit	4.7	4.7	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.6	2.6	0.00	0% - 20%
EB1538415-011	AM-BH05 2.50-2.75	EA037: pH (F)	----	0.1	pH Unit	6.3	6.4	1.57	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.0	2.0	0.00	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 318593)									
EB1538415-027	AM-BH06 2.00-2.25	EA037: pH (F)	----	0.1	pH Unit	6.1	6.0	1.65	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	1.7	1.7	0.00	0% - 50%
EB1538415-043	AM-BH07 1.75-2.00	EA037: pH (F)	----	0.1	pH Unit	6.2	6.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.3	2.2	4.44	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 318594)									
EB1538415-058	AM-BH08 1.25-1.50	EA037: pH (F)	----	0.1	pH Unit	5.2	5.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.6	2.6	0.00	0% - 20%
EA055: Moisture Content (QC Lot: 319728)									
EB1538408-068	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	17.9	17.1	4.82	0% - 50%
EA055: Moisture Content (QC Lot: 319729)									
EB1538419-013	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.8	9.5	13.0	0% - 50%
EB1538478-025	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	19.4	19.6	1.13	0% - 50%
EP231: Perfluorinated Compounds (QC Lot: 319989)									
EB1538415-036	AM-BH06 2.50-3.00	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1538408-013	Anonymous	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231: Perfluorinated Compounds (QC Lot: 319989) - continued									
EB1538408-013	Anonymous	EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319990)									
EB1538415-036	AM-BH06 2.50-3.00	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
EB1538408-013	Anonymous	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231: Perfluorinated Compounds (QCLot: 319989)								
EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	0.00625 mg/kg	82.6	50	130
EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	0.00625 mg/kg	73.0	30	130
EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	0.00625 mg/kg	110	50	130
EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	0.00625 mg/kg	118	30	130
EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.5	50	130
EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	50	130
EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.7	50	130
EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.9	50	130
EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	50	130
EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	36	130
EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	50	130
EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.3	50	130
EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	0.00625 mg/kg	73.7	30	130
EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.6	30	130
EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)								
EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	0.00625 mg/kg	122	56	138
EP231: 8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.8	54	134
EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	54	146

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231: Perfluorinated Compounds (QCLot: 319989)							
EB1538408-013	Anonymous	EP231-PFC: N-Et-FOSA	4151-50-2	0.00625 mg/kg	116	50	130
		EP231-PFC: N-Et-FOSE	1691-99-2	0.00625 mg/kg	114	30	130
		EP231-PFC: N-Me-FOSA	31506-32-8	0.00625 mg/kg	127	50	130
		EP231-PFC: N-Me-FOSE	2448-09-7	0.00625 mg/kg	106	30	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP231: Perfluorinated Compounds (QCLot: 319989) - continued							
EB1538408-013	Anonymous	EP231-PFC: PFBS	375-73-5	0.00125 mg/kg	103	50	130
		EP231-PFC: PFDcA	335-76-2	0.00125 mg/kg	69.2	50	130
		EP231-PFC: PFDcS	67906-42-7	0.00125 mg/kg	67.7	50	130
		EP231-PFC: PFDoA	307-55-1	0.00125 mg/kg	113	50	130
		EP231-PFC: PFHpA	375-85-9	0.00125 mg/kg	101	50	130
		EP231-PFC: PFHxA	307-24-4	0.00125 mg/kg	79.3	30	130
		EP231-PFC: PFHxS	355-46-4	0.00125 mg/kg	106	50	130
		EP231-PFC: PFNA	375-95-1	0.00125 mg/kg	81.3	50	130
		EP231-PFC: PFOSA	754-91-6	0.00125 mg/kg	71.7	50	130
		EP231-PFC: PFTeA	376-06-7	0.00625 mg/kg	65.5	30	130
		EP231-PFC: PFTriA	72629-94-8	0.00125 mg/kg	114	30	130
		EP231-PFC: PFUnA	2058-94-8	0.00125 mg/kg	123	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)							
EB1538408-013	Anonymous	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.00625 mg/kg	131	56	138
		EP231: PFOA	335-67-1	0.00125 mg/kg	100	54	134
		EP231: PFOS	1763-23-1	0.00125 mg/kg	107	54	146

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1538415**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61-7-3243 7222
Project	: 1538021	Date Samples Received	: 18-Dec-2015
Site	: ----	Issue Date	: 12-Jan-2016
Sampler	: TAMARA SICCAMA	No. of samples received	: 70
Order number	: 1538021	No. of samples analysed	: 55

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH05 0.00-0.25,	AM-BH05 0.25-0.50,	**16-Dec-2015**	**31-Dec-2015**	13-Jun-2016	✓	**31-Dec-2015**	13-Jun-2016	✓
AM-BH05 0.50-0.75,	AM-BH05 0.75-1.00,							
AM-BH05 1.00-1.25,	AM-BH05 1.25-1.50,							
AM-BH05 1.50-1.75,	AM-BH05 1.75-2.00,							
AM-BH05 2.00-2.25,	AM-BH05 2.25-2.50,							
AM-BH05 2.50-2.75,	AM-BH05 2.75-3.00,							
AM-BH06 0.00-0.25,	AM-BH06 0.25-0.50,							
AM-BH06 0.50-0.75,	AM-BH06 0.75-1.00,							
AM-BH06 1.00-1.25,	AM-BH06 1.25-1.50,							
AM-BH06 1.50-1.75,	AM-BH06 1.75-2.00,							
AM-BH06 2.00-2.25,	AM-BH06 2.25-2.50,							
AM-BH06 2.50-2.75,	AM-BH06 2.75-3.00,							
AM-BH07 0.00-0.25,	AM-BH07 0.50-0.75,							
AM-BH07 0.75-1.00,	AM-BH07 1.00-1.25,							
AM-BH07 1.25-1.50,	AM-BH07 1.50-1.75,							
AM-BH07 1.75-2.00,	AM-BH07 2.00-2.25,							
AM-BH07 2.25-2.50,	AM-BH07 2.50-2.75,							
AM-BH07 2.75-3.00,	AM-BH08 0.00-0.25,							
AM-BH08 0.25-0.50,	AM-BH08 0.50-0.75,							
AM-BH08 0.75-1.00,	AM-BH08 1.00-1.25,							
AM-BH08 1.25-1.50,	AM-BH08 1.50-1.75,							
AM-BH08 1.75-2.00,	AM-BH08 2.00-2.25,							
AM-BH08 2.25-2.50,	AM-BH08 2.50-2.75,							
AM-BH08 2.75-3.00								
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH05 0.50-1.00,	AM-BH05 2.50-3.00,	**16-Dec-2015**	**----**	----	----	**23-Dec-2015**	30-Dec-2015	✓
AM-BH06 0.50-1.00,	AM-BH06 2.50-3.00,							
AM-BH07 0.00-0.50,	AM-BH07 1.50-2.00,							
AM-BH08 0.00-0.50,	AM-BH08 1.00-1.50							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231)								
AM-BH05 0.50-1.00,	AM-BH05 2.50-3.00,	**16-Dec-2015**	**24-Dec-2015**	13-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH06 0.50-1.00,	AM-BH06 2.50-3.00,							
AM-BH07 0.00-0.50,	AM-BH07 1.50-2.00,							
AM-BH08 0.00-0.50,	AM-BH08 1.00-1.50							
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231-PFC)								
AM-BH05 0.50-1.00,	AM-BH05 2.50-3.00,	**16-Dec-2015**	**24-Dec-2015**	13-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH06 0.50-1.00,	AM-BH06 2.50-3.00,							
AM-BH07 0.00-0.50,	AM-BH07 1.50-2.00,							
AM-BH08 0.00-0.50,	AM-BH08 1.00-1.50							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	5	47	**10.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	3	29	**10.34**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Perfluorinated Compounds by LCMSMS	EP231-PFC	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	SOIL	In-House. A portion of soil is soaked in sodium hydroxide followed by extraction with methanol. The extract is neutralised with HCl and an aliquot taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.
Perfluorinated Compounds by LCMSMS	EP231-PFC	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In House

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1538415**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 4
Order number	: ----	Quote number	: EM2015GOLASS0592 (EN-002-15)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 18-Dec-2015 4:00 PM	Issue Date	: 22-Dec-2015
Client Requested Due Date	: 04-Jan-2016	Scheduled Reporting Date	: **04-Jan-2016**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 6	Temperature	: 6.3, 8.2, 9.1, 0.9, 3.2, 3.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 70 / 55

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFOS/PFOA analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The expected due date for his data is 11/01/2016.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS
EB1538415-001	[16-Dec-2015]	AM-BH05 0.00-0.25		✓		
EB1538415-002	[16-Dec-2015]	AM-BH05 0.25-0.50		✓		
EB1538415-003	[16-Dec-2015]	AM-BH05 0.50-0.75		✓		
EB1538415-004	[16-Dec-2015]	AM-BH05 0.75-1.00		✓		
EB1538415-005	[16-Dec-2015]	AM-BH05 1.00-1.25		✓		
EB1538415-006	[16-Dec-2015]	AM-BH05 1.25-1.50		✓		
EB1538415-007	[16-Dec-2015]	AM-BH05 1.50-1.75		✓		
EB1538415-008	[16-Dec-2015]	AM-BH05 1.75-2.00		✓		
EB1538415-009	[16-Dec-2015]	AM-BH05 2.00-2.25		✓		
EB1538415-010	[16-Dec-2015]	AM-BH05 2.25-2.50		✓		
EB1538415-011	[16-Dec-2015]	AM-BH05 2.50-2.75		✓		
EB1538415-012	[16-Dec-2015]	AM-BH05 2.75-3.00		✓		
EB1538415-013	[16-Dec-2015]	AM-BH05 0.00-0.50	✓			
EB1538415-014	[16-Dec-2015]	AM-BH05 0.50-1.00			✓	✓
EB1538415-015	[16-Dec-2015]	AM-BH05 1.00-1.50	✓			
EB1538415-016	[16-Dec-2015]	AM-BH05 1.50-2.00	✓			
EB1538415-017	[16-Dec-2015]	AM-BH05 2.00-2.50	✓			
EB1538415-018	[16-Dec-2015]	AM-BH05 2.50-3.00			✓	✓
EB1538415-019	[16-Dec-2015]	AM-BH06 0.00-0.25		✓		
EB1538415-020	[16-Dec-2015]	AM-BH06 0.25-0.50		✓		
EB1538415-021	[16-Dec-2015]	AM-BH06 0.50-0.75		✓		
EB1538415-022	[16-Dec-2015]	AM-BH06 0.75-1.00		✓		
EB1538415-023	[16-Dec-2015]	AM-BH06 1.00-1.25		✓		
EB1538415-024	[16-Dec-2015]	AM-BH06 1.25-1.50		✓		
EB1538415-025	[16-Dec-2015]	AM-BH06 1.50-1.75		✓		
EB1538415-026	[16-Dec-2015]	AM-BH06 1.75-2.00		✓		
EB1538415-027	[16-Dec-2015]	AM-BH06 2.00-2.25		✓		
EB1538415-028	[16-Dec-2015]	AM-BH06 2.25-2.50		✓		
EB1538415-029	[16-Dec-2015]	AM-BH06 2.50-2.75		✓		
EB1538415-030	[16-Dec-2015]	AM-BH06 2.75-3.00		✓		
EB1538415-031	[16-Dec-2015]	AM-BH06 0.00-0.50	✓			
EB1538415-032	[16-Dec-2015]	AM-BH06 0.50-1.00			✓	✓
EB1538415-033	[16-Dec-2015]	AM-BH06 1.00-1.50	✓			
EB1538415-034	[16-Dec-2015]	AM-BH06 1.50-2.00	✓			
EB1538415-035	[16-Dec-2015]	AM-BH06 2.00-2.50	✓			

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS
EB1538415-036	[16-Dec-2015]	AM-BH06 2.50-3.00			✓	✓
EB1538415-037	[16-Dec-2015]	AM-BH07 0.00-0.25		✓		
EB1538415-038	[16-Dec-2015]	AM-BH07 0.50-0.75		✓		
EB1538415-039	[16-Dec-2015]	AM-BH07 0.75-1.00		✓		
EB1538415-040	[16-Dec-2015]	AM-BH07 1.00-1.25		✓		
EB1538415-041	[16-Dec-2015]	AM-BH07 1.25-1.50		✓		
EB1538415-042	[16-Dec-2015]	AM-BH07 1.50-1.75		✓		
EB1538415-043	[16-Dec-2015]	AM-BH07 1.75-2.00		✓		
EB1538415-044	[16-Dec-2015]	AM-BH07 2.00-2.25		✓		
EB1538415-045	[16-Dec-2015]	AM-BH07 2.25-2.50		✓		
EB1538415-046	[16-Dec-2015]	AM-BH07 2.50-2.75		✓		
EB1538415-047	[16-Dec-2015]	AM-BH07 2.75-3.00		✓		
EB1538415-048	[16-Dec-2015]	AM-BH07 0.00-0.50			✓	✓
EB1538415-049	[16-Dec-2015]	AM-BH07 1.00-1.50	✓			
EB1538415-050	[16-Dec-2015]	AM-BH07 1.50-2.00			✓	✓
EB1538415-051	[16-Dec-2015]	AM-BH07 2.00-2.50	✓			
EB1538415-052	[16-Dec-2015]	AM-BH07 2.50-3.00	✓			
EB1538415-053	[16-Dec-2015]	AM-BH08 0.00-0.25		✓		
EB1538415-054	[16-Dec-2015]	AM-BH08 0.25-0.50		✓		
EB1538415-055	[16-Dec-2015]	AM-BH08 0.50-0.75		✓		
EB1538415-056	[16-Dec-2015]	AM-BH08 0.75-1.00		✓		
EB1538415-057	[16-Dec-2015]	AM-BH08 1.00-1.25		✓		
EB1538415-058	[16-Dec-2015]	AM-BH08 1.25-1.50		✓		
EB1538415-059	[16-Dec-2015]	AM-BH08 1.50-1.75		✓		
EB1538415-060	[16-Dec-2015]	AM-BH08 1.75-2.00		✓		
EB1538415-061	[16-Dec-2015]	AM-BH08 2.00-2.25		✓		
EB1538415-062	[16-Dec-2015]	AM-BH08 2.25-2.50		✓		
EB1538415-063	[16-Dec-2015]	AM-BH08 2.50-2.75		✓		
EB1538415-064	[16-Dec-2015]	AM-BH08 2.75-3.00		✓		
EB1538415-065	[16-Dec-2015]	AM-BH08 0.00-0.50			✓	✓
EB1538415-066	[16-Dec-2015]	AM-BH08 0.50-1.00	✓			
EB1538415-067	[16-Dec-2015]	AM-BH08 1.00-1.50			✓	✓
EB1538415-068	[16-Dec-2015]	AM-BH08 1.50-2.00	✓			
EB1538415-069	[16-Dec-2015]	AM-BH08 2.00-2.50	✓			
EB1538415-070	[16-Dec-2015]	AM-BH08 2.50-3.00	✓			

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	kbiram@golder.com.au

TAMARA SICCAMA

- *AU Certificate of Analysis - NATA (COA)	Email	TSiccama@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	TSiccama@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	TSiccama@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	TSiccama@golder.com.au
- Chain of Custody (CoC) (COC)	Email	TSiccama@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	TSiccama@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	TSiccama@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	TSiccama@golder.com.au

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD** **FAX** **DISK** **EMAIL** **BULLETIN BOARD**		
Email Format:	**PDF** **Excel** **Other** **Email Add:** tsiccama@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystal-Rae Biram
Contact Phone: 07 37215400 **Email:** KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
1	AM-BH05	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
2	AM-BH05	0.25	0.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
3	AM-BH05	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
4	AM-BH05	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
5	AM-BH05	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
6	AM-BH05	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
7	AM-BH05	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
8	AM-BH05	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
9	AM-BH05	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
10	AM-BH05	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
11	AM-BH05	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
12	AM-BH05	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
13	AM-BH05	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
14	AM-BH05	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N				x	
15	AM-BH05	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
16	AM-BH05	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
17	AM-BH05	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
18	AM-BH05	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N				x	

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE = Core(CR)** **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		**Chilled**		**LAB. BATCH NUMBER**	
Suitable Containers		**Frozen**		**Bill to:**	
Cool Box		**Ambient**		**Address**	

SCANNED

Environmental Division
Brisbane
Work Order Reference
EB1538415

SPLIT BATCH
Test Split due to no. of samples
Assoc. Batch No.
EB1538408 & EB1538419.

Telephone : + 61-7-3243 7222

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD**	**FAX** **DISK**	**EMAIL** **BULLETIN BOARD**
Email Format:	**PDF**	**Excel** **Other**	**Email Addr** tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: **Krystal-Rae Biram**
Contact Phone: 07 37215400 **Email:** KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EF231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
19	AM-BH06	0.00	0.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
20	AM-BH06	0.25	0.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
21	AM-BH06	0.50	0.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
22	AM-BH06	0.75	1.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
23	AM-BH06	1.00	1.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
24	AM-BH06	1.25	1.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
25	AM-BH06	1.50	1.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
26	AM-BH06	1.75	2.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
27	AM-BH06	2.00	2.25	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
28	AM-BH06	2.25	2.50	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
29	AM-BH06	2.50	2.75	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
30	AM-BH06	2.75	3.00	Soil	16/12/2015		Bag	Frozen	1	N		x	x		
31	AM-BH06	0.00	0.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
32	AM-BH06	0.50	1.00	Soil	16/12/2015		Jar	Chilled	1	N				x	
33	AM-BH06	1.00	1.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
34	AM-BH06	1.50	2.00	Soil	16/12/2015		Jar	Chilled	1	N	x				
35	AM-BH06	2.00	2.50	Soil	16/12/2015		Jar	Chilled	1	N	x				
36	AM-BH06	2.50	3.00	Soil	16/12/2015		Jar	Chilled	1	N				x	

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		**Chilled**		**LAB. BATCH NUMBER**	
Suitable Containers		**Frozen**		**Bill to:**	
Cool Box		**Ambient**		**Address**	

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD**	**FAX**	**DISK**	**EMAIL**	**BULLETIN BOARD**
Email Format:	**PDF**	**Excel**	**Other**	**Email Addr**	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystal-Rae Biram
Contact Phone: 07 37215400 **Email:** KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
37	AM-BH07	0.00	0.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
	~~AM-BH07~~	~~0.25~~	~~0.50~~	~~Soil~~	~~17/12/2015~~		~~Bag~~	~~Frozen~~	~~1~~	~~N~~		~~x~~	~~x~~		
38	AM-BH07	0.50	0.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
39	AM-BH07	0.75	1.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
40	AM-BH07	1.00	1.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
41	AM-BH07	1.25	1.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
42	AM-BH07	1.50	1.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
43	AM-BH07	1.75	2.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
44	AM-BH07	2.00	2.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
45	AM-BH07	2.25	2.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
46	AM-BH07	2.50	2.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
47	AM-BH07	2.75	3.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
48	AM-BH07	0.00	0.50	Soil	17/12/2015		Jar	Chilled	1	N				x	
49	~~AM-BH07~~	~~0.50~~	~~1.00~~	~~Soil~~	~~17/12/2015~~		~~Jar~~	~~Chilled~~	~~1~~	~~N~~	~~x~~				
49	AM-BH07	1.00	1.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
50	AM-BH07	1.50	2.00	Soil	17/12/2015		Jar	Chilled	1	N				x	
51	AM-BH07	2.00	2.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
52	AM-BH07	2.50	3.00	Soil	17/12/2015		Jar	Chilled	1	N	x				

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE = Core(CR)** **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory **LAB. BATCH NUMBER**

Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days):	**5**	**BY:**	
Report Format:	**HARD**	**FAX** **DISK** **EMAIL** **BULLETIN BOARD**	
Email Format:	**PDF**	**Excel** **Other** **Email Add**	tsiccama@golder.com.au

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Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: **Krystal-Rae Biram**
Contact Phone: **07 37215400** **Email:** KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: **N**
Samples taken from a known Weed and or Pest Area: **N**

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
53	AM-BH08	0.00	0.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
54	AM-BH08	0.25	0.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
55	AM-BH08	0.50	0.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
56	AM-BH08	0.75	1.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
57	AM-BH08	1.00	1.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
58	AM-BH08	1.25	1.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
59	AM-BH08	1.50	1.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
60	AM-BH08	1.75	2.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
61	AM-BH08	2.00	2.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
62	AM-BH08	2.25	2.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
63	AM-BH08	2.50	2.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
64	AM-BH08	2.75	3.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
66	AM-BH08	0.00	0.50	Soil	17/12/2015		Jar	Chilled	1	N				x	
67	AM-BH08	0.50	1.00	Soil	17/12/2015		Jar	Chilled	1	N	x				
68	AM-BH08	1.00	1.50	Soil	17/12/2015		Jar	Chilled	1	N				x	
69	AM-BH08	1.50	2.00	Soil	17/12/2015		Jar	Chilled	1	N	x				
70	AM-BH08	2.00	2.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
	AM-BH08	2.50	3.00	Soil	17/12/2015		Jar	Chilled	1	N	x				

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE = Core(CR)** **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory			**LAB. BATCH NUMBER**	
Security Seal		**Chilled**		**Bill to:**
Suitable Containers		**Frozen**		**Address**
Cool Box		**Ambient**		

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1538419**	Page	: 1 of 47
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015 16:00
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 06-Jan-2016 16:55
Site	: ----		
		No. of samples received	: 77
Quote number	: ----	No. of samples analysed	: 54

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD
Nanthini Coilparampi	Laboratory Manager - Inorganics	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- EG005T (Total Metals): Sample EB1538312-001 shows poor matrix spike recovery due to sample heterogeneity. Confirmed by visual inspection.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- PFOS and PFOA results are reported as an aggregate of linear and branched isomers.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 0.00-0.25	AM-BH09 0.25-0.50	AM-BH09 0.50-0.75	AM-BH09 0.75-1.00	AM-BH09 1.00-1.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-001	EB1538419-002	EB1538419-003	EB1538419-004	EB1538419-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	7.3	7.4	4.6	3.8	5.5
pH (Fox)	----	0.1	pH Unit	4.1	5.3	3.2	2.1	3.1
Reaction Rate	----	1	-	3	3	2	2	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 0.00-0.25	AM-BH09 0.25-0.50	AM-BH09 0.50-0.75	AM-BH09 0.75-1.00	AM-BH09 1.00-1.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-001	EB1538419-002	EB1538419-003	EB1538419-004	EB1538419-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 0.00-0.25	AM-BH09 0.25-0.50	AM-BH09 0.50-0.75	AM-BH09 0.75-1.00	AM-BH09 1.00-1.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-001	EB1538419-002	EB1538419-003	EB1538419-004	EB1538419-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 0.00-0.25	AM-BH09 0.25-0.50	AM-BH09 0.50-0.75	AM-BH09 0.75-1.00	AM-BH09 1.00-1.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-001	EB1538419-002	EB1538419-003	EB1538419-004	EB1538419-005
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 1.25-1.50	AM-BH09 1.50-1.75	AM-BH09 1.75-2.00	AM-BH09 2.00-2.25	AM-BH09 2.25-2.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-006	EB1538419-007	EB1538419-008	EB1538419-009	EB1538419-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.8	4.5	4.3	4.2	4.3
pH (Fox)	----	0.1	pH Unit	2.8	2.9	2.4	2.4	2.5
Reaction Rate	----	1	-	4	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 1.25-1.50	AM-BH09 1.50-1.75	AM-BH09 1.75-2.00	AM-BH09 2.00-2.25	AM-BH09 2.25-2.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-006	EB1538419-007	EB1538419-008	EB1538419-009	EB1538419-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 1.25-1.50	AM-BH09 1.50-1.75	AM-BH09 1.75-2.00	AM-BH09 2.00-2.25	AM-BH09 2.25-2.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-006	EB1538419-007	EB1538419-008	EB1538419-009	EB1538419-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 1.25-1.50	AM-BH09 1.50-1.75	AM-BH09 1.75-2.00	AM-BH09 2.00-2.25	AM-BH09 2.25-2.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-006	EB1538419-007	EB1538419-008	EB1538419-009	EB1538419-010
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 2.50-2.75	AM-BH09 2.75-3.00	AM-BH09 0.00-0.50	AM-BH09 0.50-1.00	AM-BH17 0.00-0.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-011	EB1538419-012	EB1538419-013	EB1538419-014	EB1538419-019
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	5.3	4.8	----	----	6.1
pH (Fox)	----	0.1	pH Unit	3.0	3.0	----	----	3.8
Reaction Rate	----	1	-	3	2	----	----	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	10.8	19.4	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 2.50-2.75	AM-BH09 2.75-3.00	AM-BH09 0.00-0.50	AM-BH09 0.50-1.00	AM-BH17 0.00-0.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-011	EB1538419-012	EB1538419-013	EB1538419-014	EB1538419-019
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 2.50-2.75	AM-BH09 2.75-3.00	AM-BH09 0.00-0.50	AM-BH09 0.50-1.00	AM-BH17 0.00-0.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-011	EB1538419-012	EB1538419-013	EB1538419-014	EB1538419-019
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
PFOA	335-67-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	<0.005	<0.005	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	<0.001	<0.001	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	<0.001	<0.001	----
PFBS	375-73-5	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFNA	375-95-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH09 2.50-2.75	AM-BH09 2.75-3.00	AM-BH09 0.00-0.50	AM-BH09 0.50-1.00	AM-BH17 0.00-0.25
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-011	EB1538419-012	EB1538419-013	EB1538419-014	EB1538419-019
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTeA	376-06-7	0.001	mg/kg	----	----	<0.001	<0.001	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 0.25-0.50	AM-BH17 0.50-0.75	AM-BH17 0.75-1.00	AM-BH17 1.00-1.25	AM-BH17 1.25-1.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-020	EB1538419-021	EB1538419-022	EB1538419-023	EB1538419-024
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	5.8	7.9	8.0	8.1	8.5
pH (Fox)	----	0.1	pH Unit	3.4	6.0	2.6	4.0	1.7
Reaction Rate	----	1	-	2	3	4	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 0.25-0.50	AM-BH17 0.50-0.75	AM-BH17 0.75-1.00	AM-BH17 1.00-1.25	AM-BH17 1.25-1.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-020	EB1538419-021	EB1538419-022	EB1538419-023	EB1538419-024
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 0.25-0.50	AM-BH17 0.50-0.75	AM-BH17 0.75-1.00	AM-BH17 1.00-1.25	AM-BH17 1.25-1.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-020	EB1538419-021	EB1538419-022	EB1538419-023	EB1538419-024
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 0.25-0.50	AM-BH17 0.50-0.75	AM-BH17 0.75-1.00	AM-BH17 1.00-1.25	AM-BH17 1.25-1.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-020	EB1538419-021	EB1538419-022	EB1538419-023	EB1538419-024
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 1.50-1.75	AM-BH17 1.75-2.00	AM-BH17 2.00-2.25	AM-BH17 2.25-2.50	AM-BH17 2.50-2.75
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-025	EB1538419-026	EB1538419-027	EB1538419-028	EB1538419-029
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.3	8.3	8.3	8.4	8.4
pH (Fox)	----	0.1	pH Unit	2.0	1.8	1.5	1.6	1.7
Reaction Rate	----	1	-	4	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 1.50-1.75	AM-BH17 1.75-2.00	AM-BH17 2.00-2.25	AM-BH17 2.25-2.50	AM-BH17 2.50-2.75
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-025	EB1538419-026	EB1538419-027	EB1538419-028	EB1538419-029
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 1.50-1.75	AM-BH17 1.75-2.00	AM-BH17 2.00-2.25	AM-BH17 2.25-2.50	AM-BH17 2.50-2.75
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-025	EB1538419-026	EB1538419-027	EB1538419-028	EB1538419-029
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 1.50-1.75	AM-BH17 1.75-2.00	AM-BH17 2.00-2.25	AM-BH17 2.25-2.50	AM-BH17 2.50-2.75
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-025	EB1538419-026	EB1538419-027	EB1538419-028	EB1538419-029
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 2.75-3.00	AM-BH17 0.00-0.50	AM-BH17 1.00-1.50	AM-BH19 0.00-0.25	AM-BH19 0.25-0.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-030	EB1538419-031	EB1538419-033	EB1538419-038	EB1538419-039
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.5	----	----	7.4	5.0
pH (Fox)	----	0.1	pH Unit	1.7	----	----	3.6	2.4
Reaction Rate	----	1	-	4	----	----	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	15.8	54.2	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 2.75-3.00	AM-BH17 0.00-0.50	AM-BH17 1.00-1.50	AM-BH19 0.00-0.25	AM-BH19 0.25-0.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-030	EB1538419-031	EB1538419-033	EB1538419-038	EB1538419-039
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 2.75-3.00	AM-BH17 0.00-0.50	AM-BH17 1.00-1.50	AM-BH19 0.00-0.25	AM-BH19 0.25-0.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-030	EB1538419-031	EB1538419-033	EB1538419-038	EB1538419-039
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	<0.0005	<0.0005	----	----
PFOA	335-67-1	0.0005	mg/kg	----	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	<0.005	<0.005	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	<0.001	<0.001	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	<0.001	<0.001	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	<0.001	<0.001	----	----
PFBS	375-73-5	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFNA	375-95-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH17 2.75-3.00	AM-BH17 0.00-0.50	AM-BH17 1.00-1.50	AM-BH19 0.00-0.25	AM-BH19 0.25-0.50
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-030	EB1538419-031	EB1538419-033	EB1538419-038	EB1538419-039
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
PFTeA	376-06-7	0.001	mg/kg	----	<0.001	<0.001	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.50-0.75	AM-BH19 0.75-1.00	AM-BH19 1.00-1.25	AM-BH19 1.25-1.50	AM-BH19 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-040	EB1538419-041	EB1538419-042	EB1538419-043	EB1538419-044
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	4.5	4.4	4.3	6.0	6.3
pH (Fox)	----	0.1	pH Unit	1.9	2.7	2.5	2.5	2.6
Reaction Rate	----	1	-	3	3	2	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.50-0.75	AM-BH19 0.75-1.00	AM-BH19 1.00-1.25	AM-BH19 1.25-1.50	AM-BH19 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-040	EB1538419-041	EB1538419-042	EB1538419-043	EB1538419-044
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.50-0.75	AM-BH19 0.75-1.00	AM-BH19 1.00-1.25	AM-BH19 1.25-1.50	AM-BH19 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-040	EB1538419-041	EB1538419-042	EB1538419-043	EB1538419-044
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.50-0.75	AM-BH19 0.75-1.00	AM-BH19 1.00-1.25	AM-BH19 1.25-1.50	AM-BH19 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-040	EB1538419-041	EB1538419-042	EB1538419-043	EB1538419-044
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 1.75-2.00	AM-BH19 2.00-2.25	AM-BH19 2.25-2.50	AM-BH19 2.50-2.75	AM-BH19 2.75-3.00
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-045	EB1538419-046	EB1538419-047	EB1538419-048	EB1538419-049
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.4	6.4	6.5	6.2	6.1
pH (Fox)	----	0.1	pH Unit	3.5	3.7	4.0	2.0	2.0
Reaction Rate	----	1	-	3	3	3	4	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 1.75-2.00	AM-BH19 2.00-2.25	AM-BH19 2.25-2.50	AM-BH19 2.50-2.75	AM-BH19 2.75-3.00
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-045	EB1538419-046	EB1538419-047	EB1538419-048	EB1538419-049
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 1.75-2.00	AM-BH19 2.00-2.25	AM-BH19 2.25-2.50	AM-BH19 2.50-2.75	AM-BH19 2.75-3.00
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-045	EB1538419-046	EB1538419-047	EB1538419-048	EB1538419-049
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 1.75-2.00	AM-BH19 2.00-2.25	AM-BH19 2.25-2.50	AM-BH19 2.50-2.75	AM-BH19 2.75-3.00
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-045	EB1538419-046	EB1538419-047	EB1538419-048	EB1538419-049
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.00-0.50	AM-BH19 1.50-2.00	AM-BH20 0.00-0.50	AM-BH21 0.50-1.00	AM-BH22 1.00-1.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-050	EB1538419-053	EB1538419-056	EB1538419-057	EB1538419-058
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	----	----	----	----
pH (Fox)	----	0.1	pH Unit	----	----	----	----	----
Reaction Rate	----	1	-	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	32.7	26.9	31.6	24.5	39.8
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	25	11	20
Cadmium	7440-43-9	1	mg/kg	----	----	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	----	30	54	58
Copper	7440-50-8	5	mg/kg	----	----	30	12	19
Lead	7439-92-1	5	mg/kg	----	----	35	7	42
Nickel	7440-02-0	2	mg/kg	----	----	38	7	14
Zinc	7440-66-6	5	mg/kg	----	----	90	25	35
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.00-0.50	AM-BH19 1.50-2.00	AM-BH20 0.00-0.50	AM-BH21 0.50-1.00	AM-BH22 1.00-1.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-050	EB1538419-053	EB1538419-056	EB1538419-057	EB1538419-058
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	**120**	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	**120**	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	<50	<50
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	<50	<50
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.00-0.50	AM-BH19 1.50-2.00	AM-BH20 0.00-0.50	AM-BH21 0.50-1.00	AM-BH22 1.00-1.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-050	EB1538419-053	EB1538419-056	EB1538419-057	EB1538419-058
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	<10	<10
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	<10	<10
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	----	----	<1	<1	<1
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	<0.001	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	----	----	----
PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH19 0.00-0.50	AM-BH19 1.50-2.00	AM-BH20 0.00-0.50	AM-BH21 0.50-1.00	AM-BH22 1.00-1.50
			Client sampling date / time	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]	[17-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-050	EB1538419-053	EB1538419-056	EB1538419-057	EB1538419-058
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	67.2	87.8	66.1
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	60.1	72.7	56.6
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	101	99.7	94.3
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	99.7	101	93.0
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	69.2	59.5	57.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	104	101	102
Anthracene-d10	1719-06-8	0.5	%	----	----	95.9	91.7	90.9
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	101	107	104
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	93.3	103	81.5
Toluene-D8	2037-26-5	0.2	%	----	----	75.4	103	77.0
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	71.2	86.3	68.0

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH23 0.50-1.00	AM-BH28 0.00-0.25	AM-BH28 0.25-0.50	AM-BH28 0.50-0.75	AM-BH28 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-059	EB1538419-060	EB1538419-061	EB1538419-062	EB1538419-063
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	4.9	4.8	5.4	6.9
pH (Fox)	----	0.1	pH Unit	----	3.0	2.8	1.7	1.5
Reaction Rate	----	1	-	----	3	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	26.8	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	14	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	30	----	----	----	----
Copper	7440-50-8	5	mg/kg	8	----	----	----	----
Lead	7439-92-1	5	mg/kg	13	----	----	----	----
Nickel	7440-02-0	2	mg/kg	6	----	----	----	----
Zinc	7440-66-6	5	mg/kg	24	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH23 0.50-1.00	AM-BH28 0.00-0.25	AM-BH28 0.25-0.50	AM-BH28 0.50-0.75	AM-BH28 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-059	EB1538419-060	EB1538419-061	EB1538419-062	EB1538419-063
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH23 0.50-1.00	AM-BH28 0.00-0.25	AM-BH28 0.25-0.50	AM-BH28 0.50-0.75	AM-BH28 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-059	EB1538419-060	EB1538419-061	EB1538419-062	EB1538419-063
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	----	----	----
PFOA	335-67-1	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	----	----	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	----	----	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	----	----	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	----	----	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	----	----	----
PFBS	375-73-5	0.0002	mg/kg	----	----	----	----	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	----	----	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	----	----	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	----	----	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	----	----	----
PFNA	375-95-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH23 0.50-1.00	AM-BH28 0.00-0.25	AM-BH28 0.25-0.50	AM-BH28 0.50-0.75	AM-BH28 1.50-1.75
			Client sampling date / time	[17-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]
Compound	CAS Number	LOR	Unit	EB1538419-059	EB1538419-060	EB1538419-061	EB1538419-062	EB1538419-063
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	----	----	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	----	----	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	----	----	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	----	----	----
PFTeA	376-06-7	0.001	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	81.4	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	66.3	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	96.2	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	98.9	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	55.8	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	103	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	87.5	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	104	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	72.4	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	68.4	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	75.2	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH28 2.50-2.75	AM-BH28 2.75-3.00	AM-BH28 0.00-0.50	AM-BH28 2.50-3.00	----
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	----
Compound	CAS Number	LOR	Unit	EB1538419-064	EB1538419-065	EB1538419-066	EB1538419-069	--------
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.6	7.3	----	----	----
pH (Fox)	----	0.1	pH Unit	2.0	2.1	----	----	----
Reaction Rate	----	1	-	4	4	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	15.0	36.6	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH28 2.50-2.75	AM-BH28 2.75-3.00	AM-BH28 0.00-0.50	AM-BH28 2.50-3.00	----
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	----
Compound	CAS Number	LOR	Unit	EB1538419-064	EB1538419-065	EB1538419-066	EB1538419-069	--------
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH28 2.50-2.75	AM-BH28 2.75-3.00	AM-BH28 0.00-0.50	AM-BH28 2.50-3.00	----
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	----
Compound	CAS Number	LOR	Unit	EB1538419-064	EB1538419-065	EB1538419-066	EB1538419-069	--------
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
PFOA	335-67-1	0.0005	mg/kg	----	----	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	----	----	<0.005	<0.005	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	----	----	<0.001	<0.001	----
PFOSA	754-91-6	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
N-Me-FOSA	31506-32-8	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSA	4151-50-2	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Me-FOSE	2448-09-7	0.001	mg/kg	----	----	<0.001	<0.001	----
N-Et-FOSE	1691-99-2	0.001	mg/kg	----	----	<0.001	<0.001	----
PFBS	375-73-5	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxS	355-46-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDcS	67906-42-7	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHxA	307-24-4	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFHpA	375-85-9	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFNA	375-95-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH28 2.50-2.75	AM-BH28 2.75-3.00	AM-BH28 0.00-0.50	AM-BH28 2.50-3.00	----
			Client sampling date / time	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	[18-Dec-2015]	----
Compound	CAS Number	LOR	Unit	EB1538419-064	EB1538419-065	EB1538419-066	EB1538419-069	--------
				Result	Result	Result	Result	Result
EP231: Perfluorinated Compounds - Continued								
PFDcA	335-76-2	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFUnA	2058-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFDoA	307-55-1	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTriA	72629-94-8	0.0002	mg/kg	----	----	<0.0002	<0.0002	----
PFTeA	376-06-7	0.001	mg/kg	----	----	<0.001	<0.001	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1538419**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 18-Dec-2015
C-O-C number	: ----	Date Analysis Commenced	: 23-Dec-2015
Sampler	: TAMARA SICCAMA	Issue Date	: 06-Jan-2016
Site	: ----	No. of samples received	: 77
Quote number	: ----	No. of samples analysed	: 54

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
		Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD
Nanthini Coilparampi	Laboratory Manager - Inorganics	Sydney Inorganics, Smithfield, NSW

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA037: Ass Field Screening Analysis (QC Lot: 318595)									
EB1538419-001	AM-BH09 0.00-0.25	EA037: pH (F)	----	0.1	pH Unit	7.3	7.2	1.38	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.1	4.2	2.41	0% - 20%
EB1538419-011	AM-BH09 2.50-2.75	EA037: pH (F)	----	0.1	pH Unit	5.3	5.4	1.87	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.0	3.0	0.00	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 318596)									
EB1538419-027	AM-BH17 2.00-2.25	EA037: pH (F)	----	0.1	pH Unit	8.3	8.4	1.20	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	1.5	1.6	6.45	0% - 50%
EB1538419-044	AM-BH19 1.50-1.75	EA037: pH (F)	----	0.1	pH Unit	6.3	6.4	1.57	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.6	2.5	3.92	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 318597)									
EB1538419-064	AM-BH28 2.50-2.75	EA037: pH (F)	----	0.1	pH Unit	6.6	6.5	1.53	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.0	1.9	5.13	0% - 20%
EA055: Moisture Content (QC Lot: 319294)									
EB1538235-006	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	15.1	14.1	6.52	0% - 50%
EB1538472-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	45.7	51.2	11.3	0% - 20%
EA055: Moisture Content (QC Lot: 319729)									
EB1538419-013	AM-BH09 0.00-0.50	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.8	9.5	13.0	0% - 50%
EB1538478-025	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	19.4	19.6	1.13	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 319210)									
EB1538312-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	4	4	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	11	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	5	37.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	69	71	2.72	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	78	80	2.88	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	522	539	3.21	0% - 20%
EB1538596-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	5	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	13	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	41	42	3.58	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	104	108	3.44	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 319209)									
EB1538301-022	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 319209) - continued									
EB1538596-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 319065)									
EB1538419-056	AM-BH20 0.00-0.50	EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EB1538142-002	Anonymous	EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 319065) - continued									
EB1538142-002	Anonymous	EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 319066)									
EB1538419-056	AM-BH20 0.00-0.50	EP071SG-S: C10 - C14 Fraction	----	25	mg/kg	<50	<50	0.00	No Limit
		EP071SG-S: C15 - C28 Fraction	----	50	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	50	mg/kg	<100	110	11.2	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 319066)									
EB1538419-056	AM-BH20 0.00-0.50	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	120	140	17.6	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 319064)									
EB1538142-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 318903)									
EB1538419-056	AM-BH20 0.00-0.50	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 318903)									
EB1538419-056	AM-BH20 0.00-0.50	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 318903)									
EB1538419-056	AM-BH20 0.00-0.50	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 318903) - continued									
EB1538419-056	AM-BH20 0.00-0.50	EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319989)									
EB1538415-036	Anonymous	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1538408-013	Anonymous	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319990)									
EB1538415-036	Anonymous	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231: Perfluorinated Compounds (QC Lot: 319990) - continued									
EB1538415-036	Anonymous	EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
EB1538408-013	Anonymous	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319991)									
EB1538419-053	AM-BH19 1.50-2.00	EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 319992)									
EB1538419-053	AM-BH19 1.50-2.00	EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 319210)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	102	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.43 mg/kg	100	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	103	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	107	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	105	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	96.3	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	110	87	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 319209)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	88.9	78	122
EP068A: Organochlorine Pesticides (OC) (QCLot: 319065)								
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	111	60	123
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	108	62	121
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	105	80	142
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	103	70	130
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	104	54	121
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	107	51	125
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	109	49	121
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	109	61	122
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	114	57	118
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	61	122
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	106	67	129
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	112	55	125
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	104	60	137
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	108	52	125
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	115	55	129
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	55	129
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	115	65	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	114	58	118
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	# 120	54	112
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	95.5	53	136
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	117	56	119
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 319066)								
EP071SG-S: C10 - C14 Fraction	----	25	mg/kg	<20	318 mg/kg	79.6	47	112
EP071SG-S: C15 - C28 Fraction	----	50	mg/kg	<50	531 mg/kg	86.6	55	108

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 319066) - continued								
EP071SG-S: C29 - C36 Fraction	----	50	mg/kg	<50	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 319066)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	82.9	46	115
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	85.7	53	113
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 319064)								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	98.9	83	121
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	84.0	74	118
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	106	72	115
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	68.6	64	120
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	77.4	76	121
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	87.8	59	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	100	64	131
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	90.0	70	129
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	98.2	66	119
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	86.2	45	134
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	97.2	70	116
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	95.0	81	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	86.8	53	135
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	93.8	74	119
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	102	72	117
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	100	70	134
EP080/071: Total Petroleum Hydrocarbons (QCLot: 318903)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	103	66	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 318903)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	102	66	119
EP080: BTEXN (QCLot: 318903)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	94.6	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	76.2	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	82.2	66	106
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	85.4	72	115
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	81.6	68	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	83.3	73	105
EP231: Perfluorinated Compounds (QCLot: 319989)								
EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	0.00625 mg/kg	82.6	50	130
EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	0.00625 mg/kg	73.0	30	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231: Perfluorinated Compounds (QCLot: 319989) - continued								
EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	0.00625 mg/kg	110	50	130
EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	0.00625 mg/kg	118	30	130
EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.5	50	130
EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	50	130
EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.7	50	130
EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.9	50	130
EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.4	50	130
EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	36	130
EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	50	130
EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.3	50	130
EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	0.00625 mg/kg	73.7	30	130
EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.6	30	130
EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)								
EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	0.00625 mg/kg	122	56	138
EP231: 8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.8	54	134
EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	54	146
EP231: Perfluorinated Compounds (QCLot: 319991)								
EP231-PFC: N-Et-FOSA	4151-50-2	0.001	mg/kg	<0.001	0.00625 mg/kg	87.8	50	130
EP231-PFC: N-Et-FOSE	1691-99-2	0.001	mg/kg	<0.001	0.00625 mg/kg	87.5	30	130
EP231-PFC: N-Me-FOSA	31506-32-8	0.001	mg/kg	<0.001	0.00625 mg/kg	100	50	130
EP231-PFC: N-Me-FOSE	2448-09-7	0.001	mg/kg	<0.001	0.00625 mg/kg	113	30	130
EP231-PFC: PFBS	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.2	50	130
EP231-PFC: PFDcA	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.0	50	130
EP231-PFC: PFDcS	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.7	50	130
EP231-PFC: PFDoA	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.3	50	130
EP231-PFC: PFHpA	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.7	50	130
EP231-PFC: PFHxA	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.1	36	130
EP231-PFC: PFHxS	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.9	50	130
EP231-PFC: PFNA	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	50	130
EP231-PFC: PFOSA	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	53.2	50	130
EP231-PFC: PFTeA	376-06-7	0.001	mg/kg	<0.001	0.00625 mg/kg	88.8	30	130
EP231-PFC: PFTriA	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.2	30	130
EP231-PFC: PFUnA	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	50	130
EP231: Perfluorinated Compounds (QCLot: 319992)								
EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.005	mg/kg	<0.005	0.00625 mg/kg	105	56	138

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231: Perfluorinated Compounds (QCLot: 319992) - continued								
EP231: 8:2 Fluorotelomer sulfonate	39108-34-4	0.001	mg/kg	<0.001	----	----	----	----
EP231: PFOA	335-67-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	108	54	134
EP231: PFOS	1763-23-1	0.0005	mg/kg	<0.0005	0.00125 mg/kg	94.6	54	146

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 319210)							
EB1538312-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	93.5	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	88.5	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	# 58.8	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	# Not Determined	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	83.4	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	77.7	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 319209)							
EB1538301-024	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	78.8	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 319065)							
EB1538142-007	Anonymous	EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	106	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	100	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	104	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	83.6	70	130
		EP068: gamma-BHC	58-89-9	0.5 mg/kg	102	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	108	70	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 319066)							
EB1538419-057	AM-BH21 0.50-1.00	EP071SG-S: C10 - C14 Fraction	----	318 mg/kg	92.4	47	130
		EP071SG-S: C15 - C28 Fraction	----	531 mg/kg	100	55	130
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 319066)							
EB1538419-057	AM-BH21 0.50-1.00	EP071SG-S: >C10 - C16 Fraction	----	428 mg/kg	97.1	46	130
		EP071SG-S: >C16 - C34 Fraction	----	395 mg/kg	97.4	53	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 319064)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 319064) - continued							
EB1538142-007	Anonymous	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	95.8	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	96.2	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 318903)							
EB1538419-057	AM-BH21 0.50-1.00	EP080: C6 - C9 Fraction	----	8 mg/kg	80.6	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 318903)							
EB1538419-057	AM-BH21 0.50-1.00	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	80.7	70	130
EP080: BTEXN (QCLot: 318903)							
EB1538419-057	AM-BH21 0.50-1.00	EP080: Benzene	71-43-2	2 mg/kg	84.6	70	130
		EP080: Toluene	108-88-3	2 mg/kg	85.1	70	130
EP231: Perfluorinated Compounds (QCLot: 319989)							
EB1538408-013	Anonymous	EP231-PFC: N-Et-FOSA	4151-50-2	0.00625 mg/kg	116	50	130
		EP231-PFC: N-Et-FOSE	1691-99-2	0.00625 mg/kg	114	30	130
		EP231-PFC: N-Me-FOSA	31506-32-8	0.00625 mg/kg	127	50	130
		EP231-PFC: N-Me-FOSE	2448-09-7	0.00625 mg/kg	106	30	130
		EP231-PFC: PFBS	375-73-5	0.00125 mg/kg	103	50	130
		EP231-PFC: PFDcA	335-76-2	0.00125 mg/kg	69.2	50	130
		EP231-PFC: PFDcS	67906-42-7	0.00125 mg/kg	67.7	50	130
		EP231-PFC: PFDoA	307-55-1	0.00125 mg/kg	113	50	130
		EP231-PFC: PFHpA	375-85-9	0.00125 mg/kg	101	50	130
		EP231-PFC: PFHxA	307-24-4	0.00125 mg/kg	79.3	30	130
		EP231-PFC: PFHxS	355-46-4	0.00125 mg/kg	106	50	130
		EP231-PFC: PFNA	375-95-1	0.00125 mg/kg	81.3	50	130
		EP231-PFC: PFOSA	754-91-6	0.00125 mg/kg	71.7	50	130
		EP231-PFC: PFTeA	376-06-7	0.00625 mg/kg	65.5	30	130
		EP231-PFC: PFTriA	72629-94-8	0.00125 mg/kg	114	30	130
		EP231-PFC: PFUnA	2058-94-8	0.00125 mg/kg	123	50	130
EP231: Perfluorinated Compounds (QCLot: 319990)							
EB1538408-013	Anonymous	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.00625 mg/kg	131	56	138
		EP231: PFOA	335-67-1	0.00125 mg/kg	100	54	134
		EP231: PFOS	1763-23-1	0.00125 mg/kg	107	54	146
EP231: Perfluorinated Compounds (QCLot: 319991)							
EB1538419-053	AM-BH19 1.50-2.00	EP231-PFC: N-Et-FOSA	4151-50-2	0.00625 mg/kg	95.5	50	130
		EP231-PFC: N-Et-FOSE	1691-99-2	0.00625 mg/kg	92.6	30	130
		EP231-PFC: N-Me-FOSA	31506-32-8	0.00625 mg/kg	86.3	50	130
		EP231-PFC: N-Me-FOSE	2448-09-7	0.00625 mg/kg	124	30	130
		EP231-PFC: PFBS	375-73-5	0.00125 mg/kg	72.4	50	130
		EP231-PFC: PFDcA	335-76-2	0.00125 mg/kg	96.8	50	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231: Perfluorinated Compounds (QCLot: 319991) - continued							
EB1538419-053	AM-BH19 1.50-2.00	EP231-PFC: PFDcS	67906-42-7	0.00125 mg/kg	70.7	50	130
		EP231-PFC: PFDoA	307-55-1	0.00125 mg/kg	80.4	50	130
		EP231-PFC: PFHpA	375-85-9	0.00125 mg/kg	74.3	50	130
		EP231-PFC: PFHxA	307-24-4	0.00125 mg/kg	80.1	30	130
		EP231-PFC: PFHxS	355-46-4	0.00125 mg/kg	95.8	50	130
		EP231-PFC: PFNA	375-95-1	0.00125 mg/kg	115	50	130
		EP231-PFC: PFOSA	754-91-6	0.00125 mg/kg	51.2	50	130
		EP231-PFC: PFTeA	376-06-7	0.00625 mg/kg	97.9	30	130
		EP231-PFC: PFTriA	72629-94-8	0.00125 mg/kg	73.4	30	130
		EP231-PFC: PFUnA	2058-94-8	0.00125 mg/kg	91.1	50	130
EP231: Perfluorinated Compounds (QCLot: 319992)							
EB1538419-053	AM-BH19 1.50-2.00	EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.00625 mg/kg	123	56	138
		EP231: PFOA	335-67-1	0.00125 mg/kg	90.4	54	134
		EP231: PFOS	1763-23-1	0.00125 mg/kg	94.0	54	146

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1538419**	Page	: 1 of 7
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61-7-3243 7222
Project	: 1538021	Date Samples Received	: 18-Dec-2015
Site	: ----	Issue Date	: 06-Jan-2016
Sampler	: TAMARA SICCAMA	No. of samples received	: 77
Order number	: 1538021	No. of samples analysed	: 54

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	QC-319065-002	----	**Hexachlorobenzene (HCB)**	118-74-1	120 %	54-112%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB1538312--001	Anonymous	**Chromium**	7440-47-3	58.8 %	70-130%	**Recovery less than lower data quality objective**
EG005T: Total Metals by ICP-AES	EB1538312--001	Anonymous	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH09 0.00-0.25,	AM-BH09 0.25-0.50,	**17-Dec-2015**	**31-Dec-2015**	14-Jun-2016	✓	**31-Dec-2015**	14-Jun-2016	✓
AM-BH09 0.50-0.75,	AM-BH09 0.75-1.00,							
AM-BH09 1.00-1.25,	AM-BH09 1.25-1.50,							
AM-BH09 1.50-1.75,	AM-BH09 1.75-2.00,							
AM-BH09 2.00-2.25,	AM-BH09 2.25-2.50,							
AM-BH09 2.50-2.75,	AM-BH09 2.75-3.00,							
AM-BH19 0.00-0.25,	AM-BH19 0.25-0.50,							
AM-BH19 0.50-0.75,	AM-BH19 0.75-1.00,							
AM-BH19 1.00-1.25,	AM-BH19 1.25-1.50,							
AM-BH19 1.50-1.75,	AM-BH19 1.75-2.00,							
AM-BH19 2.00-2.25,	AM-BH19 2.25-2.50,							
AM-BH19 2.50-2.75,	AM-BH19 2.75-3.00							
Snap Lock Bag - frozen (EA037)								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis - Continued								
AM-BH17 0.00-0.25,	AM-BH17 0.25-0.50,	**18-Dec-2015**	**31-Dec-2015**	15-Jun-2016	✓	**31-Dec-2015**	15-Jun-2016	✓
AM-BH17 0.50-0.75,	AM-BH17 0.75-1.00,							
AM-BH17 1.00-1.25,	AM-BH17 1.25-1.50,							
AM-BH17 1.50-1.75,	AM-BH17 1.75-2.00,							
AM-BH17 2.00-2.25,	AM-BH17 2.25-2.50,							
AM-BH17 2.50-2.75,	AM-BH17 2.75-3.00,							
AM-BH28 0.00-0.25,	AM-BH28 0.25-0.50,							
AM-BH28 0.50-0.75,	AM-BH28 1.50-1.75,							
AM-BH28 2.50-2.75,	AM-BH28 2.75-3.00							
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH09 0.00-0.50,	AM-BH09 0.50-1.00,	**17-Dec-2015**	**----**	----	----	**23-Dec-2015**	31-Dec-2015	✓
AM-BH19 0.00-0.50,	AM-BH19 1.50-2.00,							
AM-BH20 0.00-0.50,	AM-BH21 0.50-1.00,							
AM-BH22 1.00-1.50,	AM-BH23 0.50-1.00							
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH17 0.00-0.50,	AM-BH17 1.00-1.50,	**18-Dec-2015**	**----**	----	----	**23-Dec-2015**	01-Jan-2016	✓
AM-BH28 0.00-0.50,	AM-BH28 2.50-3.00							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH20 0.00-0.50,	AM-BH21 0.50-1.00,	**17-Dec-2015**	**24-Dec-2015**	14-Jun-2016	✓	**24-Dec-2015**	14-Jun-2016	✓
AM-BH22 1.00-1.50,	AM-BH23 0.50-1.00							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH20 0.00-0.50,	AM-BH21 0.50-1.00,	**17-Dec-2015**	**24-Dec-2015**	14-Jan-2016	✓	**29-Dec-2015**	14-Jan-2016	✓
AM-BH22 1.00-1.50,	AM-BH23 0.50-1.00							
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
AM-BH20 0.00-0.50,	AM-BH21 0.50-1.00,	**17-Dec-2015**	**23-Dec-2015**	31-Dec-2015	✓	**29-Dec-2015**	01-Feb-2016	✓
AM-BH22 1.00-1.50,	AM-BH23 0.50-1.00							
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH20 0.00-0.50,	AM-BH21 0.50-1.00,	**17-Dec-2015**	**23-Dec-2015**	31-Dec-2015	✓	**30-Dec-2015**	01-Feb-2016	✓
AM-BH22 1.00-1.50,	AM-BH23 0.50-1.00							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH20 0.00-0.50,	AM-BH21 0.50-1.00,	**17-Dec-2015**	**23-Dec-2015**	31-Dec-2015	✓	**29-Dec-2015**	01-Feb-2016	✓
AM-BH22 1.00-1.50,	AM-BH23 0.50-1.00							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH20 0.00-0.50,	AM-BH21 0.50-1.00,	**17-Dec-2015**	**23-Dec-2015**	31-Dec-2015	✓	**29-Dec-2015**	31-Dec-2015	✓
AM-BH22 1.00-1.50,	AM-BH23 0.50-1.00							
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231)								
AM-BH09 0.00-0.50,	AM-BH09 0.50-1.00,	**17-Dec-2015**	**24-Dec-2015**	14-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH19 0.00-0.50,	AM-BH19 1.50-2.00							
Soil Glass Jar - Unpreserved (EP231)								
AM-BH17 0.00-0.50,	AM-BH17 1.00-1.50,	**18-Dec-2015**	**24-Dec-2015**	15-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH28 0.00-0.50,	AM-BH28 2.50-3.00							
EP231: Perfluorinated Compounds								
Soil Glass Jar - Unpreserved (EP231-PFC)								
AM-BH09 0.00-0.50,	AM-BH09 0.50-1.00,	**17-Dec-2015**	**24-Dec-2015**	14-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH19 0.00-0.50,	AM-BH19 1.50-2.00							
Soil Glass Jar - Unpreserved (EP231-PFC)								
AM-BH17 0.00-0.50,	AM-BH17 1.00-1.50,	**18-Dec-2015**	**24-Dec-2015**	15-Jun-2016	✓	**24-Dec-2015**	02-Feb-2016	✓
AM-BH28 0.00-0.50,	AM-BH28 2.50-3.00							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	5	42	11.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS	EP231-PFC	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
TRH Volatiles/BTEX	EP080	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Perfluorooctyl Acids and Sulfonates by LC/MS/MS	EP231	SOIL	In-House. A portion of soil is soaked in sodium hydroxide followed by extraction with methanol. The extract is neutralised with HCl and an aliquot taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.
Perfluorinated Compounds by LCMSMS	EP231-PFC	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In House
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	HARD	FAX	DISK	EMAIL	BULLETIN BOARD
Email Format:	PDF	Excel	Other	Email Addı	tsiccama@golder.com.au

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Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
1	AM-BH09	0.00	0.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
2	AM-BH09	0.25	0.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
3	AM-BH09	0.50	0.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
4	AM-BH09	0.75	1.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
5	AM-BH09	1.00	1.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
6	AM-BH09	1.25	1.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
7	AM-BH09	1.50	1.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
8	AM-BH09	1.75	2.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
9	AM-BH09	2.00	2.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
10	AM-BH09	2.25	2.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
11	AM-BH09	2.50	2.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
12	AM-BH09	2.75	3.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
13	AM-BH09	0.00	0.50	Soil	17/12/2015		Jar	Chilled	1	N				x	
14	AM-BH09	0.50	1.00	Soil	17/12/2015		Jar	Chilled	1	N				x	
15	AM-BH09	1.00	1.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
16	AM-BH09	1.50	2.00	Soil	17/12/2015		Jar	Chilled	1	N	x				
17	AM-BH09	2.00	2.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
18	AM-BH09	2.50	3.00	Soil	17/12/2015		Jar	Chilled	1	N	x				

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other
SAMPLE TYPE = Core(CR)
HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list
Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory
Security Seal | **Chilled** | **LAB. BATCH NUMBER** | **Bill to:**
Suitable Containers | **Frozen** | **Address**
Cool Box | **Ambient**

SCANNED

Environmental Division
Brisbane
Work Order Reference
EB1538419

SPLIT BATCH
Test Split due to no. of samples
Assoc. Batch No.
EB1538408 & EB1538415

Telephone : + 61-7-3243 7222

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD** **FAX** **DISK** **EMAIL** **BULLETIN BOARD**		
Email Format:	**PDF** **Excel** **Other** **Email Addr** tsiccama@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: **Krystal-Rae Biram**
Contact Phone: **07 37215400** **Email:** KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
19	AM-BH17	0.00	0.25	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
20	AM-BH17	0.25	0.50	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
21	AM-BH17	0.50	0.75	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
22	AM-BH17	0.75	1.00	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
23	AM-BH17	1.00	1.25	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
24	AM-BH17	1.25	1.50	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
25	AM-BH17	1.50	1.75	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
26	AM-BH17	1.75	2.00	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
27	AM-BH17	2.00	2.25	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
28	AM-BH17	2.25	2.50	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
29	AM-BH17	2.50	2.75	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
30	AM-BH17	2.75	3.00	Soil	18/12/2015		Bag	Frozen	1	N		x	x		
31	AM-BH17	0.00	0.50	Soil	18/12/2015		Jar	Chilled	1	N	x			x	
32	AM-BH17	0.50	1.00	Soil	18/12/2015		Jar	Chilled	1	N	x				
33	AM-BH17	1.00	1.50	Soil	18/12/2015		Jar	Chilled	1	N				x	
34	AM-BH17	1.50	2.00	Soil	18/12/2015		Jar	Chilled	1	N	x				
35	AM-BH17	2.00	2.50	Soil	18/12/2015		Jar	Chilled	1	N	x				
36	AM-BH17	2.50	3.00	Soil	18/12/2015		Jar	Chilled	1	N	x				
37	QC1				18/12/2015										

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE = Core(CR)** **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory				**LAB. BATCH NUMBER**	
Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD**	**FAX** **DISK** **EMAIL** **BULLETIN BOARD**	
Email Format:	**PDF**	**Excel** **Other** **Email Addr**	tsiccama@golder.com.au

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Project Manager: **Krystal-Rae Biram**
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-26 (TRH/BTEXN/PAH/8 metals)
38	AM-BH19	0.00	0.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
39	AM-BH19	0.25	0.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
40	AM-BH19	0.50	0.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
41	AM-BH19	0.75	1.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
42	AM-BH19	1.00	1.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
43	AM-BH19	1.25	1.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
44	AM-BH19	1.50	1.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
45	AM-BH19	1.75	2.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
46	AM-BH19	2.00	2.25	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
47	AM-BH19	2.25	2.50	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
48	AM-BH19	2.50	2.75	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
49	AM-BH19	2.75	3.00	Soil	17/12/2015		Bag	Frozen	1	N		x	x		
50	AM-BH19	0.00	0.50	Soil	17/12/2015		Jar	Chilled	1	N				x	
51	AM-BH19	0.50	1.00	Soil	17/12/2015		Jar	Chilled	1	N	x				
52	AM-BH19	1.00	1.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
53	AM-BH19	1.50	2.00	Soil	17/12/2015		Jar	Chilled	1	N				x	
54	AM-BH19	2.00	2.50	Soil	17/12/2015		Jar	Chilled	1	N	x				
55	AM-BH19	2.50	3.00	Soil	17/12/2015		Jar	Chilled	1	N	x				

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RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		**Chilled**	**LAB. BATCH NUMBER**		
Suitable Containers		**Frozen**		**Bill to:**	
Cool Box		**Ambient**		**Address**	

Project ID:	1538021	**Quote/Order No.:**	**EN/002/15**
Site Location:	**BNE Airport**	**Lab Name:**	**ALS Environmental**
Sampled By:	**Tamara Siccama**		
Turnaround (Days):	**5**	**BY:**	

Report Format: HARD FAX DISK EMAIL BULLETIN BOARD

Email Format: PDF Excel Other Email Add: tsiccama@golder.com.au

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Project Manager: Krystal-Rae Biram

Contact Phone: 07 37215400 **Email:** KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD			EP231-PFC (PFS/PFOA extended suite with 20 analytes)	S-7SG (TRH/BTEXN/PAH) - with silica gel clean up	Organochlorine pesticides	S2 - 8 Heavy Metals											
56	AM-BH20	0.00	0.50	Soil	17/12/2015		Jar	Chilled	1	N					x	x	x											
57	AM-BH21	0.50	1.00	Soil	17/12/2015		Jar	Chilled	1	N					x	x	x											
58	AM-BH22	1.00	1.50	Soil	17/12/2015		Jar	Chilled	1	N					x	x	x											
59	AM-BH23	0.50	1.00	Soil	17/12/2015		jar	Chilled	1	N					x	x	x											

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SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

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	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		**Chilled**		**LAB. BATCH NUMBER**	
Suitable Containers		**Frozen**		**Bill to:**	
Cool Box		**Ambient**		**Address**	

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1538419**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 4
Order number	: 1538021	Quote number	: EM2015GOLASS0592 (EN-002-15)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: TAMARA SICCAMA		

Dates

Date Samples Received	: 18-Dec-2015 4:00 PM	Issue Date	: 22-Dec-2015
Client Requested Due Date	: 04-Jan-2016	Scheduled Reporting Date	: **04-Jan-2016**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 6	Temperature	: 6.3, 8.2, 9.1, 0.9, 3.2, 3.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 77 / 54

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Extra samples 'AM-BH20 0.5-1.0', 'AM-BH20 1.0-1.5', 'AM-BH21 0.0-0.5', 'AM-BH21 1.0-1.5', 'AM-BH22 0.0-0.5', 'AM-BH22 0.5-1.0', 'AM-BH23 0.0-0.5' and 'AM-BH23 1.0-1.5' were received. These samples will remain on hold until confirmation of analysis is received. Please contact ALS Brisbane Client Services Department to add a directive for these samples at ALSEnviro.Brisbane@alsglobal.com**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFOS/PFOA analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The expected due date for this data is 11/01/2016.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- **Sample 'QC1' is listed on the COC twice though only one sample with this name was received. It is listed both as on hold and requiring PFOS/PFOA. This sample will be kept on hold until confirmation of analysis is received.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-07 SG TRH/BTEXN/PAH (SIM) inc Silica Gel Clean Up
EB1538419-001	[17-Dec-2015]	AM-BH09 0.00-0.25		✓					
EB1538419-002	[17-Dec-2015]	AM-BH09 0.25-0.50		✓					
EB1538419-003	[17-Dec-2015]	AM-BH09 0.50-0.75		✓					
EB1538419-004	[17-Dec-2015]	AM-BH09 0.75-1.00		✓					
EB1538419-005	[17-Dec-2015]	AM-BH09 1.00-1.25		✓					
EB1538419-006	[17-Dec-2015]	AM-BH09 1.25-1.50		✓					
EB1538419-007	[17-Dec-2015]	AM-BH09 1.50-1.75		✓					
EB1538419-008	[17-Dec-2015]	AM-BH09 1.75-2.00		✓					
EB1538419-009	[17-Dec-2015]	AM-BH09 2.00-2.25		✓					
EB1538419-010	[17-Dec-2015]	AM-BH09 2.25-2.50		✓					
EB1538419-011	[17-Dec-2015]	AM-BH09 2.50-2.75		✓					
EB1538419-012	[17-Dec-2015]	AM-BH09 2.75-3.00		✓					
EB1538419-013	[17-Dec-2015]	AM-BH09 0.00-0.50			✓		✓		
EB1538419-014	[17-Dec-2015]	AM-BH09 0.50-1.00			✓		✓		
EB1538419-015	[17-Dec-2015]	AM-BH09 1.00-1.50	✓						
EB1538419-016	[17-Dec-2015]	AM-BH09 1.50-2.00	✓						
EB1538419-017	[17-Dec-2015]	AM-BH09 2.00-2.50	✓						
EB1538419-018	[17-Dec-2015]	AM-BH09 2.50-3.00	✓						
EB1538419-019	[18-Dec-2015]	AM-BH17 0.00-0.25		✓					
EB1538419-020	[18-Dec-2015]	AM-BH17 0.25-0.50		✓					
EB1538419-021	[18-Dec-2015]	AM-BH17 0.50-0.75		✓					
EB1538419-022	[18-Dec-2015]	AM-BH17 0.75-1.00		✓					
EB1538419-023	[18-Dec-2015]	AM-BH17 1.00-1.25		✓					
EB1538419-024	[18-Dec-2015]	AM-BH17 1.25-1.50		✓					
EB1538419-025	[18-Dec-2015]	AM-BH17 1.50-1.75		✓					
EB1538419-026	[18-Dec-2015]	AM-BH17 1.75-2.00		✓					
EB1538419-027	[18-Dec-2015]	AM-BH17 2.00-2.25		✓					
EB1538419-028	[18-Dec-2015]	AM-BH17 2.25-2.50		✓					
EB1538419-029	[18-Dec-2015]	AM-BH17 2.50-2.75		✓					
EB1538419-030	[18-Dec-2015]	AM-BH17 2.75-3.00		✓					
EB1538419-031	[18-Dec-2015]	AM-BH17 0.00-0.50			✓		✓		
EB1538419-032	[18-Dec-2015]	AM-BH17 0.50-1.00	✓						
EB1538419-033	[18-Dec-2015]	AM-BH17 1.00-1.50			✓		✓		
EB1538419-034	[18-Dec-2015]	AM-BH17 1.50-2.00	✓						
EB1538419-035	[18-Dec-2015]	AM-BH17 2.00-2.50	✓						

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-07 SG TRH/BTEXN/PAH (SIM) inc Silica Gel Clean Up
EB1538419-036	[18-Dec-2015]	AM-BH17 2.50-3.00	✓						
EB1538419-037	[18-Dec-2015]	QC1	✓						
EB1538419-038	[17-Dec-2015]	AM-BH19 0.00-0.25		✓					
EB1538419-039	[17-Dec-2015]	AM-BH19 0.25-0.50		✓					
EB1538419-040	[17-Dec-2015]	AM-BH19 0.50-0.75		✓					
EB1538419-041	[17-Dec-2015]	AM-BH19 0.75-1.00		✓					
EB1538419-042	[17-Dec-2015]	AM-BH19 1.00-1.25		✓					
EB1538419-043	[17-Dec-2015]	AM-BH19 1.25-1.50		✓					
EB1538419-044	[17-Dec-2015]	AM-BH19 1.50-1.75		✓					
EB1538419-045	[17-Dec-2015]	AM-BH19 1.75-2.00		✓					
EB1538419-046	[17-Dec-2015]	AM-BH19 2.00-2.25		✓					
EB1538419-047	[17-Dec-2015]	AM-BH19 2.25-2.50		✓					
EB1538419-048	[17-Dec-2015]	AM-BH19 2.50-2.75		✓					
EB1538419-049	[17-Dec-2015]	AM-BH19 2.75-3.00		✓					
EB1538419-050	[17-Dec-2015]	AM-BH19 .00-0.50			✓		✓		
EB1538419-051	[17-Dec-2015]	AM-BH19 0.50-1.00	✓						
EB1538419-052	[17-Dec-2015]	AM-BH19 1.00-1.50	✓						
EB1538419-053	[17-Dec-2015]	AM-BH19 1.50-2.00			✓		✓		
EB1538419-054	[17-Dec-2015]	AM-BH19 2.00-2.50	✓						
EB1538419-055	[17-Dec-2015]	AM-BH19 2.50-3.00	✓						
EB1538419-056	[17-Dec-2015]	AM-BH20 0.00-0.50			✓	✓		✓	✓
EB1538419-057	[17-Dec-2015]	AM-BH21 0.50-1.00			✓	✓		✓	✓
EB1538419-058	[17-Dec-2015]	AM-BH22 1.00-1.50			✓	✓		✓	✓
EB1538419-059	[17-Dec-2015]	AM-BH23 0.50-1.00			✓	✓		✓	✓
EB1538419-060	[18-Dec-2015]	AM-BH28 0.00-0.25		✓					
EB1538419-061	[18-Dec-2015]	AM-BH28 0.25-0.50		✓					
EB1538419-062	[18-Dec-2015]	AM-BH28 0.50-0.75		✓					
EB1538419-063	[18-Dec-2015]	AM-BH28 1.50-1.75		✓					
EB1538419-064	[18-Dec-2015]	AM-BH28 2.50-2.75		✓					
EB1538419-065	[18-Dec-2015]	AM-BH28 2.75-3.00		✓					
EB1538419-066	[18-Dec-2015]	AM-BH28 0.00-0.50			✓		✓		
EB1538419-067	[18-Dec-2015]	AM-BH28 0.50-1.00	✓						
EB1538419-068	[18-Dec-2015]	AM-BH28 1.50-2.00	✓						
EB1538419-069	[18-Dec-2015]	AM-BH28 2.50-3.00			✓		✓		
EB1538419-071	[17-Dec-2015]	AM-BH20 0.5-1.0	✓						
EB1538419-072	[17-Dec-2015]	AM-BH20 1.0-1.5	✓						
EB1538419-073	[17-Dec-2015]	AM-BH21 0.0-0.5	✓						
EB1538419-074	[17-Dec-2015]	AM-BH21 1.0-1.5	✓						
EB1538419-075	[17-Dec-2015]	AM-BH22 0.0-0.5	✓						
EB1538419-076	[17-Dec-2015]	AM-BH22 0.5-1.0	✓						
EB1538419-077	[17-Dec-2015]	AM-BH23 0.0-0.5	✓						

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231-PFC Perfluorinated Compounds by LC/MS/MS	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-07 SG TRH/BTEXN/PAH (SIM) inc Silica Gel Clean Up
EB1538419-078	[17-Dec-2015]	AM-BH23 1.0-1.5	✓						

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	kbiram@golder.com.au

TAMARA SICCAMA

- *AU Certificate of Analysis - NATA (COA)	Email	TSiccama@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	TSiccama@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	TSiccama@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	TSiccama@golder.com.au
- Chain of Custody (CoC) (COC)	Email	TSiccama@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	TSiccama@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	TSiccama@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	TSiccama@golder.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1600085**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 04-Jan-2016 15:20
C-O-C number	: ----	Date Analysis Commenced	: 07-Jan-2016
Sampler	: TAMARA SICCAMA	Issue Date	: 14-Jan-2016 13:05
Site	: ----		
		No. of samples received	: 11
Quote number	: ----	No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- EG020-F (Dissolved Metals by ICP-MS): Limit of reporting raised for some samples due to matrix interference.
- PFOS and PFOA results are reported as an aggregate of linear and branched isomers.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH01	AM-BH04	AM-BH08	AM-BH19	AM-BH28
			Client sampling date / time	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]
Compound	CAS Number	LOR	Unit	EB1600085-001	EB1600085-002	EB1600085-003	EB1600085-004	EB1600085-005
				Result	Result	Result	Result	Result
ED037P: Alkalinity by PC Titrator								
Total Alkalinity as CaCO3	----	1	mg/L	32	33	84	11	300
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	374	353	372	392	176
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	3640	3140	4800	1940	2570
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	11400	7560	6920	11300	13500
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	3.59	<0.05	<0.05	0.06	<0.05
Iron	7439-89-6	0.05	mg/L	122	118	125	117	29.8
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFOA	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PFOSA	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
PFBS	375-73-5	0.002	µg/L	<0.002	<0.002	0.004	0.004	<0.002
PFHxS	355-46-4	0.002	µg/L	<0.002	<0.002	<0.002	0.003	<0.002
PFDcS	67906-42-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFHxA	307-24-4	0.002	µg/L	<0.002	<0.002	0.009	0.005	<0.002
PFHpA	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFNA	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFDcA	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFUnA	2058-94-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFDoA	307-55-1	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFTriA	72629-94-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFTeA	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	BIP/MW1	BIP/MW2	BP/MW6	BAC-MW07	BAC-MW24
			Client sampling date / time	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]	[04-Jan-2016]
Compound	CAS Number	LOR	Unit	EB1600085-006	EB1600085-007	EB1600085-008	EB1600085-009	EB1600085-010
				Result	Result	Result	Result	Result
ED037P: Alkalinity by PC Titrator								
Total Alkalinity as CaCO3	----	1	mg/L	<1	**524**	**911**	**1300**	**800**
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**735**	**120**	**121**	**213**	**139**
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**2340**	**2410**	**2960**	**1690**	**1340**
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**7480**	**14600**	**14200**	**12600**	**18000**
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**8.18**	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L	**294**	**53.8**	**22.0**	**24.9**	**37.1**
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFOA	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	<0.01	<0.01	**0.03**	<0.01
8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
PFOSA	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
PFBS	375-73-5	0.002	µg/L	**0.006**	**0.002**	<0.002	<0.002	<0.002
PFHxS	355-46-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFDcS	67906-42-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFHxA	307-24-4	0.002	µg/L	**0.007**	<0.002	<0.002	<0.002	<0.002
PFHpA	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFNA	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFDcA	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
PFUnA	2058-94-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFDoA	307-55-1	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFTriA	72629-94-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
PFTeA	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Q1 - Water	----	----	----	----
			Client sampling date / time	[04-Jan-2016]	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1600085-011	--------	--------	--------	--------
				Result	Result	Result	Result	Result
ED037P: Alkalinity by PC Titrator								
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EP231: Perfluorinated Compounds								
PFOS	1763-23-1	0.002	µg/L	<0.002	----	----	----	----
PFOA	335-67-1	0.002	µg/L	<0.002	----	----	----	----
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	----	----	----	----
8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	----	----	----	----
PFOSA	754-91-6	0.002	µg/L	<0.002	----	----	----	----
N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	----	----	----	----
N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	----	----	----	----
N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	----	----	----	----
PFBS	375-73-5	0.002	µg/L	<0.002	----	----	----	----
PFHxS	355-46-4	0.002	µg/L	<0.002	----	----	----	----
PFDcS	67906-42-7	0.005	µg/L	<0.005	----	----	----	----
PFHxA	307-24-4	0.002	µg/L	<0.002	----	----	----	----
PFHpA	375-85-9	0.002	µg/L	<0.002	----	----	----	----
PFNA	375-95-1	0.002	µg/L	<0.002	----	----	----	----
PFDcA	335-76-2	0.002	µg/L	<0.002	----	----	----	----
PFUnA	2058-94-8	0.005	µg/L	<0.005	----	----	----	----
PFDoA	307-55-1	0.005	µg/L	<0.005	----	----	----	----
PFTriA	72629-94-8	0.005	µg/L	<0.005	----	----	----	----
PFTeA	376-06-7	0.05	µg/L	<0.05	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1600085**	Page	: 1 of 6
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 1538021	Date Samples Received	: 04-Jan-2016
C-O-C number	: ----	Date Analysis Commenced	: 07-Jan-2016
Sampler	: TAMARA SICCAMA	Issue Date	: 14-Jan-2016
Site	: ----	No. of samples received	: 11
Quote number	: ----	No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out ir compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Gaston Allende	R&D Chemist	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
ED037P: Alkalinity by PC Titrator (QC Lot: 324901)									
EB1600085-001	AM-BH01	ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	32	26	18.3	0% - 20%
ED038A: Acidity (QC Lot: 327200)									
EB1600085-001	AM-BH01	ED038: Acidity as CaCO3	----	1	mg/L	374	365	2.60	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 325426)									
EB1600080-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	22	22	0.00	0% - 20%
EB1600114-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	14	13	0.00	0% - 50%
ED045G: Chloride by Discrete Analyser (QC Lot: 325427)									
EB1600080-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	53	54	0.00	0% - 20%
EB1600114-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	27	26	4.25	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 324939)									
EB1600085-007	BIP/MW2	EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.05	<0.05	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	53.8	53.9	0.00	0% - 20%
EB1600005-001	Anonymous	EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.05	<0.05	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.52	0.54	3.05	No Limit
EP231: Perfluorinated Compounds (QC Lot: 325321)									
EB1600085-001	AM-BH01	EP231PFC-LL: PFBS	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFDcA	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFHpA	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFHxA	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFHxS	355-46-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFNA	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFOSA	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFDcS	67906-42-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFDoA	307-55-1	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFTriA	72629-94-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFUnA	2058-94-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231PFC-LL: PFTeA	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231PFC-LL: N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP231PFC-LL: N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EB1600085-011	Q1 - Water	EP231PFC-LL: PFBS	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFDcA	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFHpA	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFHxA	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231: Perfluorinated Compounds (QC Lot: 325321) - continued									
EB1600085-011	Q1 - Water	EP231PFC-LL: PFHxS	355-46-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFNA	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: PFOSA	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231PFC-LL: N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFDcS	67906-42-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFDoA	307-55-1	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFTriA	72629-94-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: PFUnA	2058-94-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231PFC-LL: N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231PFC-LL: PFTeA	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231PFC-LL: N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP231PFC-LL: N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231: Perfluorinated Compounds (QC Lot: 325322)									
EB1600085-001	AM-BH01	EP231-LL: PFOA	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231-LL: PFOS	1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231-LL: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231-LL: 8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EB1600085-011	Q1 - Water	EP231-LL: PFOA	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231-LL: PFOS	1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231-LL: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231-LL: 8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
ED037P: Alkalinity by PC Titrator (QCLot: 324901)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	100	87	112
ED038A: Acidity (QCLot: 327200)								
ED038: Acidity as CaCO3	----	----	mg/L	----	100 mg/L	101	90	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 325426)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	96.1	85	118
				<1	100 mg/L	101	85	118
ED045G: Chloride by Discrete Analyser (QCLot: 325427)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	108	90	115
				<1	1000 mg/L	100	90	115
EG020F: Dissolved Metals by ICP-MS (QCLot: 324939)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	91.0	79	118
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	82.5	82	114
EP231: Perfluorinated Compounds (QCLot: 325321)								
EP231PFC-LL: N-Et-FOSA	4151-50-2	0.005	µg/L	<0.005	0.1 µg/L	117	51	150
EP231PFC-LL: N-Et-FOSE	1691-99-2	0.1	µg/L	<0.1	0.1 µg/L	95.2	30	130
EP231PFC-LL: N-Me-FOSA	31506-32-8	0.05	µg/L	<0.05	0.1 µg/L	115	50	150
EP231PFC-LL: N-Me-FOSE	2448-09-7	0.1	µg/L	<0.1	0.1 µg/L	93.2	36	130
EP231PFC-LL: PFBS	375-73-5	0.002	µg/L	<0.002	0.02 µg/L	90.2	50	150
EP231PFC-LL: PFDcA	335-76-2	0.002	µg/L	<0.002	0.02 µg/L	92.9	65	150
EP231PFC-LL: PFDcS	67906-42-7	0.005	µg/L	<0.005	0.02 µg/L	102	50	150
EP231PFC-LL: PFDoA	307-55-1	0.005	µg/L	<0.005	0.02 µg/L	83.0	50	150
EP231PFC-LL: PFHpA	375-85-9	0.002	µg/L	<0.002	0.02 µg/L	110	61	150
EP231PFC-LL: PFHxA	307-24-4	0.002	µg/L	<0.002	0.02 µg/L	105	50	150
EP231PFC-LL: PFHxS	355-46-4	0.002	µg/L	<0.002	0.02 µg/L	107	50	150
EP231PFC-LL: PFNA	375-95-1	0.002	µg/L	<0.002	0.02 µg/L	114	53	150
EP231PFC-LL: PFOSA	754-91-6	0.002	µg/L	<0.002	0.02 µg/L	114	50	150
EP231PFC-LL: PFTeA	376-06-7	0.05	µg/L	<0.05	0.1 µg/L	75.1	30	150
EP231PFC-LL: PFTriA	72629-94-8	0.005	µg/L	<0.005	0.02 µg/L	78.4	30	150
EP231PFC-LL: PFUnA	2058-94-8	0.005	µg/L	<0.005	0.02 µg/L	102	50	150
EP231: Perfluorinated Compounds (QCLot: 325322)								
EP231-LL: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.01	µg/L	<0.01	0.1 µg/L	89.2	60	130
EP231-LL: 8:2 Fluorotelomer sulfonate	39108-34-4	0.01	µg/L	<0.01	0.1 µg/L	79.1	60	130
EP231-LL: PFOA	335-67-1	0.002	µg/L	<0.002	0.02 µg/L	115	60	130
EP231-LL: PFOS	1763-23-1	0.002	µg/L	<0.002	0.02 µg/L	102	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 325426)							
EB1600080-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	94.7	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 325427)							
EB1600080-002	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	112	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 324939)							
EB1600005-002	Anonymous	EG020A-F: Aluminium	7429-90-5	0.5 mg/L	103	70	130
EP231: Perfluorinated Compounds (QCLot: 325321)							
EB1600085-002	AM-BH04	EP231PFC-LL: N-Et-FOSA	4151-50-2	0.1 µg/L	116	50	150
		EP231PFC-LL: N-Me-FOSA	31506-32-8	0.1 µg/L	119	50	150
		EP231PFC-LL: PFBS	375-73-5	0.02 µg/L	106	50	150
		EP231PFC-LL: PFDcA	335-76-2	0.02 µg/L	87.9	50	150
		EP231PFC-LL: PFDoA	307-55-1	0.02 µg/L	86.6	50	150
		EP231PFC-LL: PFHpA	375-85-9	0.02 µg/L	79.3	50	150
		EP231PFC-LL: PFHxA	307-24-4	0.02 µg/L	84.7	50	150
		EP231PFC-LL: PFHxS	355-46-4	0.02 µg/L	110	50	150
		EP231PFC-LL: PFNA	375-95-1	0.02 µg/L	88.7	50	150
		EP231PFC-LL: PFOSA	754-91-6	0.02 µg/L	113	50	150
EP231: Perfluorinated Compounds (QCLot: 325322)							
EB1600085-002	AM-BH04	EP231-LL: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1 µg/L	97.0	60	130
		EP231-LL: 8:2 Fluorotelomer sulfonate	39108-34-4	0.1 µg/L	91.6	60	130
		EP231-LL: PFOA	335-67-1	0.02 µg/L	104	60	130
		EP231-LL: PFOS	1763-23-1	0.02 µg/L	114	60	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1600085**	Page	: 1 of 5
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61-7-3243 7222
Project	: 1538021	Date Samples Received	: 04-Jan-2016
Site	: ----	Issue Date	: 14-Jan-2016
Sampler	: TAMARA SICCAMA	No. of samples received	: 11
Order number	: 1538021	No. of samples analysed	: 11

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P)								
AM-BH01,	AM-BH04,	**04-Jan-2016**	**----**	----	----	**07-Jan-2016**	18-Jan-2016	✓
AM-BH08,	AM-BH19,							
AM-BH28,	BIP/MW1,							
BIP/MW2,	BP/MW6,							
BAC-MW07,	BAC-MW24							
ED038A: Acidity								
Clear Plastic Bottle - Natural (ED038)								
AM-BH01,	AM-BH04,	**04-Jan-2016**	**----**	----	----	**09-Jan-2016**	18-Jan-2016	✓
AM-BH08,	AM-BH19,							
AM-BH28,	BIP/MW1,							
BIP/MW2,	BP/MW6,							
BAC-MW07,	BAC-MW24							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G)								
AM-BH01,	AM-BH04,	**04-Jan-2016**	**----**	----	----	**08-Jan-2016**	01-Feb-2016	✓
AM-BH08,	AM-BH19,							
AM-BH28,	BIP/MW1,							
BIP/MW2,	BP/MW6,							
BAC-MW07,	BAC-MW24							
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G)								
AM-BH01,	AM-BH04,	**04-Jan-2016**	**----**	----	----	**08-Jan-2016**	01-Feb-2016	✓
AM-BH08,	AM-BH19,							
AM-BH28,	BIP/MW1,							
BIP/MW2,	BP/MW6,							
BAC-MW07,	BAC-MW24							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)							
AM-BH04, AM-BH08, BAC-MW07	**04-Jan-2016**	**----**	----	----	**07-Jan-2016**	02-Jul-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
AM-BH01, AM-BH19, AM-BH28, BIP/MW1, BIP/MW2, BP/MW6, BAC-MW24	**04-Jan-2016**	**----**	----	----	**07-Jan-2016**	02-Jul-2016	✓
EP231: Perfluorinated Compounds							
HDPE (no PTFE) (EP231-LL)							
AM-BH01, AM-BH04, AM-BH08, AM-BH19, AM-BH28, BIP/MW1, BIP/MW2, BP/MW6, BAC-MW07, BAC-MW24, Q1 - Water	**04-Jan-2016**	**07-Jan-2016**	02-Jul-2016	✓	**07-Jan-2016**	02-Jul-2016	✓
EP231: Perfluorinated Compounds							
HDPE (no PTFE) (EP231PFC-LL)							
AM-BH01, AM-BH04, AM-BH08, AM-BH19, AM-BH28, BIP/MW1, BIP/MW2, BP/MW6, BAC-MW07, BAC-MW24, Q1 - Water	**04-Jan-2016**	**07-Jan-2016**	02-Jul-2016	✓	**07-Jan-2016**	02-Jul-2016	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS - Low Level	EP231PFC-LL	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PFOS, PFOA, 6:2- and 8:2-FtS	EP231-LL	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS - Low Level	EP231PFC-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PFOS, PFOA, 6:2- and 8:2-FtS	EP231-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS - Low Level	EP231PFC-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PFOS, PFOA, 6:2- and 8:2-FtS	EP231-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Perfluorinated Compounds by LCMSMS - Low Level	EP231PFC-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PFOS, PFOA, 6:2- and 8:2-FtS	EP231-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
PFOS, PFOA, 6:2- and 8:2-FtS	EP231-LL	WATER	In-house: A portion of fresh or saline water is concentrated and cleaned up using a solid phase medium. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM.
Perfluorinated Compounds by LCMSMS - Low Level	EP231PFC-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction and LC-Electrospray-MS-MS, Negative Mode using MRM.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1600085**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Tom Maloney
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: Tom.Maloney@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 2
Order number	: 1538021	Quote number	: EM2015GOLASS0592 (EN-002-15)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: TAMARA SICCAMA		

Dates

Date Samples Received	: 04-Jan-2016 3:20 PM	Issue Date	: 04-Jan-2016
Client Requested Due Date	: 11-Jan-2016	Scheduled Reporting Date	: **11-Jan-2016**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 1.8°C - Ice present
Receipt Detail	: MEDIUM ESKY	No. of samples received / analysed	: 11 / 11

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **Ultra-Trace PFC analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The estimated date for this data is 13/01/2016.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - ED037-P Alkalinity as CaCO3 (PCT)	WATER - ED038 Default Acidity as CaCO3 only	WATER - ED041G Sulfate (Turbidimetric) as SO4 2 by Discrete	WATER - ED045G Chloride by Discrete Analyser	WATER - EG020F Dissolved Metals by ICPMS	WATER - EP231PFC-LL PFOS+Extended AFFFs (20 analytes) Ultra trace
EB1600085-001	[04-Jan-2016]	AM-BH01	✓	✓	✓	✓	✓	✓
EB1600085-002	[04-Jan-2016]	AM-BH04	✓	✓	✓	✓	✓	✓
EB1600085-003	[04-Jan-2016]	AM-BH08	✓	✓	✓	✓	✓	✓
EB1600085-004	[04-Jan-2016]	AM-BH19	✓	✓	✓	✓	✓	✓
EB1600085-005	[04-Jan-2016]	AM-BH28	✓	✓	✓	✓	✓	✓
EB1600085-006	[04-Jan-2016]	BIP/MW1	✓	✓	✓	✓	✓	✓
EB1600085-007	[04-Jan-2016]	BIP/MW2	✓	✓	✓	✓	✓	✓
EB1600085-008	[04-Jan-2016]	BP/MW6	✓	✓	✓	✓	✓	✓
EB1600085-009	[04-Jan-2016]	BAC-MW07	✓	✓	✓	✓	✓	✓
EB1600085-010	[04-Jan-2016]	BAC-MW24	✓	✓	✓	✓	✓	✓
EB1600085-011	[04-Jan-2016]	Q1 - Water						✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	kbiram@golder.com.au

TAMARA SICCAMA

- *AU Certificate of Analysis - NATA (COA)	Email	TSiccama@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	TSiccama@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	TSiccama@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	TSiccama@golder.com.au
- Chain of Custody (CoC) (COC)	Email	TSiccama@golder.com.au
- EDI Format - EQUIS V5 Generic (EQUIS_V5)	Email	TSiccama@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	TSiccama@golder.com.au
- EDI Format - GOLDER_EXCEL (GOLDER_EXCEL)	Email	TSiccama@golder.com.au

Project ID	1538021	Quote/Order No.	EN/002/15
Site Location	Brisbane Airport	Lab Name	ALS Environmental
Sampled By	Tamara Siccama		
Turnaround Day	5	BY:	
Report Type	HARD FAX DISK	EMAIL	BULLETIN BOARD
Email Format	PDF Excel Other	Email Addr	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fi N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location &	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EP231-PFC-LL (PFS/PFOA extended suite with 20 analytes) - Ultra Trace	Chloride, Sulfate, Total Alkalinity, Total Acidity	Dissolved Metals (Al, Fe)
AM-BH01	1	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
AM-BH04	2	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
AM-BH08	3	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
AM-BH19	4	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
AM-BH28	5	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
BIP/MW1	6	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
BIP/MW2	7	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
BP/MW6	8	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
BAC-MW07	9	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
BAC-MW24	10	Water	04/01/2016		Bottle	Chilled	3	N	x	x	x	x
Q1 - Water	11	Water	04/01/2016		Bottle	Chilled	3	N		x		

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR)

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	04/01/2016	
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory
Sample Cost
Suitable Container
Cool Box

LAB BATCH NUMBER
Cost
Bill to
Address
Address

REC: ALS 04/01/16 15:20 JUSTIN.

Environmental Division
Brisbane
Work Order Reference
EB1600085

Telephone : + 61-7-3243 7222

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Tamara Siccama**

Report **484067-S**
Project name BNE AIRPORT
Project ID 1538021
Received Date Dec 18, 2015

Client Sample ID			**Q2**	**QC-2**
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**B15-De19883**	**B15-De19884**
Date Sampled			**Dec 16, 2015**	**Dec 16, 2015**
Test/Reference	LOR	Unit		
Per- and Polyfluorinated Alkyl Substances (PFASs)				
Perfluorobutanesulfonic acid (PFBS)	0.005	mg/kg	< 0.005	< 0.005
Perfluorobutanoic acid (PFBA)	0.005	mg/kg	< 0.005	< 0.005
Perfluorohexanesulfonic acid (PFHxS)	0.005	mg/kg	< 0.005	< 0.005
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	< 0.005	< 0.005
Perfluorodecanesulfonic acid (PFDS)	0.005	mg/kg	< 0.005	< 0.005
Perfluoropentanoic acid (PFPeA)	0.005	mg/kg	< 0.005	< 0.005
Perfluorohexanoic acid (PFHxA)	0.005	mg/kg	< 0.005	< 0.005
Perfluoroheptanoic acid (PFHpA)	0.005	mg/kg	< 0.005	< 0.005
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	< 0.005
Perfluorononanoic acid (PFNA)	0.005	mg/kg	< 0.005	< 0.005
Perfluorodecanoic acid (PFDA)	0.005	mg/kg	< 0.005	< 0.005
Perfluoroundecanoic acid (PFUnA)	0.005	mg/kg	< 0.005	< 0.005
Perfluorododecanoic acid (PFDoA)	0.005	mg/kg	< 0.005	< 0.005
Perfluorotridecanoic acid (PFTrDA)	0.005	mg/kg	< 0.005	< 0.005
Perfluorotetradecanoic acid (PFTeDA)	0.005	mg/kg	< 0.005	< 0.005
Perfluorooctanesulfonamide (PFOSA)	0.01	mg/kg	< 0.01	< 0.01
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.01	mg/kg	< 0.01	< 0.01
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.01	mg/kg	< 0.01	< 0.01
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	0.005	mg/kg	< 0.005	< 0.005
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	< 0.01
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	0.005	mg/kg	< 0.005	< 0.005
d5-n-EtFOSAA (surr.)	1	%	113	104
13C-PFHxA (surr.)	1	%	70	71
13C8-PFOS (surr.)	1	%	79	73
% Moisture	0.1	%	23	39

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluorinated Alkyl Substances (PFASs)	Brisbane	Dec 19, 2015	14 Day
- Method: LTM-ORG-2100 Analysis of PFCs in environmental samples by LC-MS/MS			
% Moisture	Brisbane	Dec 18, 2015	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Dec 18, 2015 2:30 PM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	484067	**Due:**	Dec 29, 2015
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Tamara Siccama
Project Name:	BNE AIRPORT				
Project ID:	1538021				

Eurofins | mgt Client Manager: Mark Rodriquez

Sample Detail					Per- and Polyfluorinated Alkyl Substances (PFASs)	Moisture Set
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794					X	X
External Laboratory						
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
Q2	Dec 16, 2015		Soil	B15-De19883	X	X
QC-2	Dec 16, 2015		Soil	B15-De19884	X	X

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	mg/kg	< 0.005			0.005	Pass	
Perfluorobutanoic acid (PFBA)	mg/kg	< 0.005			0.005	Pass	
Perfluorohexanesulfonic acid (PFHxS)	mg/kg	< 0.005			0.005	Pass	
Perfluorooctanesulfonic acid (PFOS)	mg/kg	< 0.005			0.005	Pass	
Perfluorodecanesulfonic acid (PFDS)	mg/kg	< 0.005			0.005	Pass	
Perfluoropentanoic acid (PFPeA)	mg/kg	< 0.005			0.005	Pass	
Perfluorohexanoic acid (PFHxA)	mg/kg	< 0.005			0.005	Pass	
Perfluoroheptanoic acid (PFHpA)	mg/kg	< 0.005			0.005	Pass	
Perfluorooctanoic acid (PFOA)	mg/kg	< 0.005			0.005	Pass	
Perfluorononanoic acid (PFNA)	mg/kg	< 0.005			0.005	Pass	
Perfluorodecanoic acid (PFDA)	mg/kg	< 0.005			0.005	Pass	
Perfluoroundecanoic acid (PFUnA)	mg/kg	< 0.005			0.005	Pass	
Perfluorododecanoic acid (PFDoA)	mg/kg	< 0.005			0.005	Pass	
Perfluorotridecanoic acid (PFTrDA)	mg/kg	< 0.005			0.005	Pass	
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	< 0.005			0.005	Pass	
Perfluorooctanesulfonamide (PFOSA)	mg/kg	< 0.01			0.01	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/kg	< 0.01			0.01	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	mg/kg	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	mg/kg	< 0.005			0.005	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/kg	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	mg/kg	< 0.005			0.005	Pass	
LCS - % Recovery							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	%	79			50-150	Pass	
Perfluorobutanoic acid (PFBA)	%	90			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	88			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	89			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	81			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	77			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	82			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	83			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	94			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	80			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	78			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	%	102			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	%	101			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	88			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	71			50-150	Pass	
Perfluorooctanesulfonamide (PFOSA)	%	120			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	%	125			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	%	104			70-130	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	%	84			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	%	93			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	%	129			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M15-De18013	NCP	%	84			50-150	Pass	
Perfluorobutanoic acid (PFBA)	M15-De18013	NCP	%	93			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M15-De18013	NCP	%	92			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M15-De18013	NCP	%	92			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M15-De18013	NCP	%	75			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M15-De18013	NCP	%	82			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M15-De18013	NCP	%	88			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M15-De18013	NCP	%	83			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M15-De18013	NCP	%	92			50-150	Pass	
Perfluorononanoic acid (PFNA)	M15-De18013	NCP	%	83			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M15-De18013	NCP	%	95			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	M15-De18013	NCP	%	102			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	M15-De18013	NCP	%	100			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M15-De18013	NCP	%	92			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M15-De18013	NCP	%	86			50-150	Pass	
Perfluorooctanesulfonamide (PFOSA)	M15-De18013	NCP	%	97			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	M15-De18013	NCP	%	129			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	M15-De18013	NCP	%	92			70-130	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	M15-De18013	NCP	%	97			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	M15-De18013	NCP	%	100			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	M15-De18013	NCP	%	130			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorobutanoic acid (PFBA)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnA)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorododecanoic acid (PFDoA)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1	Result 2	RPD			
Perfluorotetradecanoic acid (PFTeDA)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorooctanesulfonamide (PFOSA)	M15-De18012	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	M15-De18012	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	M15-De18012	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	M15-De18012	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	M15-De18012	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B15-De10372	NCP	%	20	20	1.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Mark Rodriquez	Analytical Services Manager
Bryan Wilson	Senior Analyst-Metal (QLD)
Richard Corner	Senior Analyst-Inorganic (QLD)
Richard Corner	Senior Analyst-Organic (QLD)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

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Site # 1254 & 14271

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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Tamara Siccama
Project name:	BNE AIRPORT
Project ID:	1538021
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Dec 18, 2015 2:30 PM
Eurofins | mgt reference:	**484067**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 23.6 degrees Celsius.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Mark Rodriquez on Phone : (+61) 8 8947 1557 or by e.mail: MarkRodriquez@eurofins.com.au

Results will be delivered electronically via e.mail to Tamara Siccama - tsiccama@golder.com.au.

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Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Golder Associates Pty Ltd (Qld)
Address: 147 Coronation Dve
Milton
QLD 4064

Project Name: BNE AIRPORT
Project ID: 1538021

Order No.:
Report #: 484067
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: Dec 18, 2015 2:30 PM
Due: Dec 29, 2015
Priority: 5 Day
Contact Name: Tamara Siccama

Eurofins | mgt Client Manager: Mark Rodriquez

Sample Detail					Per- and Polyfluorinated Alkyl Substances (PFASs)	Moisture Set
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794					X	X
External Laboratory						
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
Q2	Dec 16, 2015		Soil	B15-De19883	X	X
QC-2	Dec 16, 2015		Soil	B15-De19884	X	X

Project ID:	1538021	Quote/Order No.:	
Site Location:	BNE Airport	Lab Name:	Eurofins
Sampled By:	Tamara Siccama		
Turnaround (Days)	5	BY:	
Report Format:	HARD	FAX	DISK	EMAIL	BULLETIN BOARD
Email Format:	PDF	Excel	Other	Email Add	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystal-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: N
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	(PFS/PFOA extended suite with 20 analytes)
Q2		Soil	16/12/2015		Jar	Chilled	1	N		x
QC-2		Soil	18/12/2015		Jar	Chilled	1	N		x

Any issues with samples please email tsiccama@golder.com.au or phone 0421704311 - Tamara

SAMPLE MATRIX = Soil/Sediment/Fill/Other
SAMPLE TYPE = Core(CR)
HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list
Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	18/12/2015	2.30
RECEIVED BY	R. Gano	Eurofins	18/12/15	
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref
RECEIVED BY					

To Be Filled Out By Analysing Laboratory
LAB. BATCH NUMBER
Security Seal
Suitable Containers
Cool Box
Chilled
Frozen
Ambient
Bill to:
Address

23.6°C
ice

Pattmal $
#484067

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Krystle-Rae Biram**

Report **484700-W**
Project name BRISBANE AIRPORT
Project ID 1538021
Received Date Jan 04, 2016

Client Sample ID			[G02]**Q2-WATER**
Sample Matrix			**Water**
Eurofins | mgt Sample No.			**B16-Ja00085**
Date Sampled			**Jan 04, 2016**
Test/Reference	LOR	Unit	
Per- and Polyfluorinated Alkyl Substances (PFASs)			
Perfluorobutanesulfonic acid (PFBS)	0.00001	mg/L	< 0.0004
Perfluorobutanoic acid (PFBA)	0.00005	mg/L	< 0.002
Perfluorohexanesulfonic acid (PFHxS)	0.00001	mg/L	< 0.0004
Perfluorooctanesulfonic acid (PFOS)	0.00001	mg/L	< 0.0004
Perfluorodecanesulfonic acid (PFDS)	0.00001	mg/L	< 0.0004
Perfluoropentanoic acid (PFPeA)	0.00001	mg/L	< 0.0004
Perfluorohexanoic acid (PFHxA)	0.00001	mg/L	< 0.0004
Perfluoroheptanoic acid (PFHpA)	0.00001	mg/L	< 0.0004
Perfluorooctanoic acid (PFOA)	0.00001	mg/L	< 0.0004
Perfluorononanoic acid (PFNA)	0.00001	mg/L	< 0.0004
Perfluorodecanoic acid (PFDA)	0.00001	mg/L	< 0.0004
Perfluoroundecanoic acid (PFUnA)	0.00001	mg/L	< 0.0004
Perfluorododecanoic acid (PFDoA)	0.00001	mg/L	< 0.0004
Perfluorotridecanoic acid (PFTrDA)	0.00001	mg/L	< 0.0004
Perfluorotetradecanoic acid (PFTeDA)	0.00001	mg/L	< 0.0004
Perfluorooctanesulfonamide (PFOSA)	0.00005	mg/L	< 0.002
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.00005	mg/L	< 0.002
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00005	mg/L	< 0.002
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	0.00001	mg/L	< 0.0004
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.00005	mg/L	< 0.002
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	0.00001	mg/L	< 0.0004
d5-n-EtFOSAA (surr.)	1	%	62
13C-PFHxA (surr.)	1	%	107
13C8-PFOS (surr.)	1	%	56

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluorinated Alkyl Substances (PFASs)	Brisbane	Jan 04, 2016	14 Day

- Method: LTM-ORG-2100 Analysis of PFCs in environmental samples by LC-MS/MS

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NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Jan 4, 2016 4:15 PM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	484700	**Due:**	Jan 11, 2016
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Krystle-Rae Biram
Project Name:	BRISBANE AIRPORT				
Project ID:	1538021				

Eurofins | mgt Client Manager: Mark Rodriquez

Sample Detail					Per- and Polyfluorinated Alkyl Substances (PFASs)
Laboratory where analysis is conducted					
Melbourne Laboratory - NATA Site # 1254 & 14271					
Sydney Laboratory - NATA Site # 18217					
Brisbane Laboratory - NATA Site # 20794					X
External Laboratory					
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
Q2-WATER	Jan 04, 2016		Water	B16-Ja00085	X

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	mg/L	< 0.00001			0.00001	Pass	
Perfluorobutanoic acid (PFBA)	mg/L	< 0.00005			0.00005	Pass	
Perfluorohexanesulfonic acid (PFHxS)	mg/L	< 0.00001			0.00001	Pass	
Perfluorooctanesulfonic acid (PFOS)	mg/L	< 0.00001			0.00001	Pass	
Perfluorodecanesulfonic acid (PFDS)	mg/L	< 0.00001			0.00001	Pass	
Perfluoropentanoic acid (PFPeA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorohexanoic acid (PFHxA)	mg/L	< 0.00001			0.00001	Pass	
Perfluoroheptanoic acid (PFHpA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorooctanoic acid (PFOA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorononanoic acid (PFNA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorodecanoic acid (PFDA)	mg/L	< 0.00001			0.00001	Pass	
Perfluoroundecanoic acid (PFUnA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorododecanoic acid (PFDoA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorotridecanoic acid (PFTrDA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorotetradecanoic acid (PFTeDA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorooctanesulfonamide (PFOSA)	mg/L	< 0.00005			0.00005	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/L	< 0.00005			0.00005	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	mg/L	< 0.00005			0.00005	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	mg/L	< 0.00001			0.00001	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/L	< 0.00005			0.00005	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	mg/L	< 0.00001			0.00001	Pass	
LCS - % Recovery							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	%	105			50-150	Pass	
Perfluorobutanoic acid (PFBA)	%	94			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	96			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	106			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	71			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	96			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	92			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	91			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	97			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	94			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	104			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	%	90			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	%	73			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	71			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	73			50-150	Pass	
Perfluorooctanesulfonamide (PFOSA)	%	74			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	%	79			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	%	84			70-130	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	%	100			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	%	110			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	%	107			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorobutanoic acid (PFBA)	B16-Ja02131	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B16-Ja02131	NCP	mg/L	0.00009	0.00009	7.0	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B16-Ja02131	NCP	mg/L	0.00020	0.00024	18	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B16-Ja02131	NCP	mg/L	0.00002	0.00002	4.0	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnA)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorododecanoic acid (PFDoA)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorooctanesulfonamide (PFOSA)	B16-Ja02131	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	B16-Ja02131	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	B16-Ja02131	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	B16-Ja02131	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	B16-Ja02131	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G02	The LORs have been raised as there was insufficient sample provided for analysis

Authorised By

Mark Rodriquez	Analytical Services Manager
Richard Corner	Senior Analyst-Organic (QLD)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

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Site # 1254 & 14271

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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Krystle-Rae Biram
Project name:	BRISBANE AIRPORT
Project ID:	1538021
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jan 4, 2016 4:15 PM
Eurofins | mgt reference:	**484700**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 4.8 degrees Celsius.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Sample containers for volatile analysis received with zero headspace.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Mark Rodriquez on Phone : (+61) 8 8947 1557 or by e.mail: MarkRodriquez@eurofins.com.au

Results will be delivered electronically via e.mail to Krystle-Rae Biram - KBiram@golder.com.au.

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Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Jan 4, 2016 4:15 PM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	484700	**Due:**	Jan 11, 2016
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Krystle-Rae Biram
Project Name:	BRISBANE AIRPORT				
Project ID:	1538021				

Eurofins | mgt Client Manager: Mark Rodriquez

Sample Detail					Per- and Polyfluorinated Alkyl Substances (PFASs)
Laboratory where analysis is conducted					
Melbourne Laboratory - NATA Site # 1254 & 14271					
Sydney Laboratory - NATA Site # 18217					
Brisbane Laboratory - NATA Site # 20794					X
External Laboratory					
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
Q2-WATER	Jan 04, 2016		Water	B16-Ja00085	X

Project ID:	1538021	Quote/Order No.:	
Site Location:	Brisbane Airport	Lab Name:	Eurofins
Sampled By:	Tamara Siccama		
Turnaround (Da	5	BY:	
Report Format	HARD FAX DISK	EMAIL	BULLETIN BOARD
Email Format:	PDF Excel Other	Email Add:	tsiccama@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystie-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared N
Samples taken from a known Weed and or Pest Are: N

ANALYSIS REQUIRED

SAMPLE ID	Location &	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	PFC (PFOS/PFOA) Lower Limit extended state with 20 analytes) - Ultra Trace
Q2 - Water		Water	04/01/2016		Bottle	Chilled	1	N		x

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Tamara Siccama	GOLDER	04/01/2016	
RECEIVED BY	J. Augert	EUROFINS	04/01/16	16:15
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

LAB. BATCH NUMBER

4.8°C

E CN HD AP CR

CON NOTES

POST CODE

MASS

Parimal
#484700

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1624693**	Page	: 1 of 78
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016 16:00
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 21-Oct-2016 17:01
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 74		
No. of samples analysed	: 73		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005T (Total Metals): Sample EB1624693-002 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.1	8.2	7.8	7.5	7.3
ø pH (Fox)	----	0.1	pH Unit	4.8	6.3	5.8	5.5	5.4
ø Reaction Rate	----	1	-	2	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	4.7	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	211	----	----	----
Copper	7440-50-8	5	mg/kg	----	70	----	----	----
Lead	7439-92-1	5	mg/kg	----	<5	----	----	----
Nickel	7440-02-0	2	mg/kg	----	82	----	----	----
Zinc	7440-66-6	5	mg/kg	----	32	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	101	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	84.9	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	108	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	107	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	104	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	114	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	121	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	123	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	111	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	111	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	124	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	99.8	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	6.8	7.8	5.0	6.5
ø pH (Fox)	----	0.1	pH Unit	5.4	4.2	2.9	3.0	4.8
ø Reaction Rate	----	1	-	3	3	3	3	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.6	7.0	4.7	4.3
ø pH (Fox)	----	0.1	pH Unit	5.3	5.8	3.6	2.9	2.8
ø Reaction Rate	----	1	-	2	2	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.2	----	24.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	14	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	65	----
Copper	7440-50-8	5	mg/kg	----	----	----	15	----
Lead	7439-92-1	5	mg/kg	----	----	----	10	----
Nickel	7440-02-0	2	mg/kg	----	----	----	18	----
Zinc	7440-66-6	5	mg/kg	----	----	----	61	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	108	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	97.3	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	105	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	108	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	104	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	114	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	116	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	121	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	81.8	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	94.5	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	117	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	99.1	----	93.4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.3	4.1	4.0	4.2	4.3
ø pH (Fox)	----	0.1	pH Unit	2.7	2.6	2.3	2.6	2.7
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	27.7
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	92.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.5	4.8	4.7	5.2	7.0
ø pH (Fox)	----	0.1	pH Unit	2.7	3.0	2.9	3.2	4.4
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	9.1	8.0	7.6	7.6	6.8
ø pH (Fox)	----	0.1	pH Unit	9.0	7.1	3.4	5.4	2.7
ø Reaction Rate	----	1	-	4	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	5.7	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	214	----	----	----	----
Copper	7440-50-8	5	mg/kg	80	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Nickel	7440-02-0	2	mg/kg	82	----	----	----	----
Zinc	7440-66-6	5	mg/kg	38	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**100**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**92.7**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**101**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**103**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**98.9**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**109**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**110**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**117**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**110**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**106**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**120**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**89.7**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.6	5.0	5.4	5.2	5.8
ø pH (Fox)	----	0.1	pH Unit	2.9	3.0	2.7	3.0	3.5
ø Reaction Rate	----	1	-	3	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	8.0	7.2	7.8	7.7
ø pH (Fox)	----	0.1	pH Unit	5.1	4.1	1.7	2.9	2.7
ø Reaction Rate	----	1	-	3	3	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	24.5	----	43.4	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	33	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	----	----	49	----	----
Copper	7440-50-8	5	mg/kg	----	----	31	----	----
Lead	7439-92-1	5	mg/kg	----	----	60	----	----
Nickel	7440-02-0	2	mg/kg	----	----	33	----	----
Zinc	7440-66-6	5	mg/kg	----	----	242	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	108	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	96.8	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	84.2	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	86.2	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	84.8	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	92.1	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	92.6	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	98.2	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	107	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	108	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	124	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	99.5	----	86.4	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.8	7.8	7.5	7.6	7.6
ø pH (Fox)	----	0.1	pH Unit	2.8	1.7	1.7	1.8	1.6
ø Reaction Rate	----	1	-	3	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	43.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	105	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.7	7.4	7.6	4.4	4.7
ø pH (Fox)	----	0.1	pH Unit	1.6	1.4	1.8	2.6	2.8
ø Reaction Rate	----	1	-	4	4	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	15.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	14
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	<1
Chromium	7440-47-3	2	mg/kg	----	----	----	----	65
Copper	7440-50-8	5	mg/kg	----	----	----	----	18
Lead	7439-92-1	5	mg/kg	----	----	----	----	12
Nickel	7440-02-0	2	mg/kg	----	----	----	----	16
Zinc	7440-66-6	5	mg/kg	----	----	----	----	44
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	<0.05
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	**110**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	**99.2**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	**107**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	**110**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	**111**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	**117**
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	**119**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	**125**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	**101**
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	**100**
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	**119**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	**89.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.6	4.9	5.2	5.0	5.9
ø pH (Fox)	----	0.1	pH Unit	2.6	2.2	1.4	1.6	1.6
ø Reaction Rate	----	1	-	3	3	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.6	6.6	6.8	7.1	7.1
ø pH (Fox)	----	0.1	pH Unit	1.5	1.6	1.6	1.8	1.9
ø Reaction Rate	----	1	-	4	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	27.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	**0.0002**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	**0.0002**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	**0.0002**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	**0.0002**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	**100**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.2	7.9	5.9	4.5	4.1
ø pH (Fox)	----	0.1	pH Unit	6.2	5.3	3.7	2.8	2.4
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	17.8	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	8	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	51	----	----	----
Copper	7440-50-8	5	mg/kg	----	19	----	----	----
Lead	7439-92-1	5	mg/kg	----	9	----	----	----
Nickel	7440-02-0	2	mg/kg	----	38	----	----	----
Zinc	7440-66-6	5	mg/kg	----	47	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	**103**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	**87.0**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	**106**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	**104**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	**105**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	**114**	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	**117**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	**121**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	**106**	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	**104**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	**122**	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	**92.5**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.3	5.9	6.2	6.4	6.6
ø pH (Fox)	----	0.1	pH Unit	2.6	3.5	3.6	3.8	3.7
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	25.8	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	<0.0002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	<0.0002	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	<0.0002	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	112	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.2	7.5	----	----	----
ø pH (Fox)	----	0.1	pH Unit	2.1	2.4	----	----	----
ø Reaction Rate	----	1	-	3	4	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	15.6	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	7	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	----	----	42	----	----
Copper	7440-50-8	5	mg/kg	----	----	17	----	----
Lead	7439-92-1	5	mg/kg	----	----	9	----	----
Nickel	7440-02-0	2	mg/kg	----	----	27	----	----
Zinc	7440-66-6	5	mg/kg	----	----	41	----	----
Titanium	7440-32-6	10	mg/kg	----	----	250	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	1.8	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	138
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	23	135
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	155
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	157
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1624693**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 21-Oct-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 74		
No. of samples analysed	: 73		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA037: Ass Field Screening Analysis (QC Lot: 620369)									
EB1624693-001	AM-BH26 0-0.25	EA037: pH (F)	----	0.1	pH Unit	7.1	7.2	1.40	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.8	4.9	2.06	0% - 20%
EB1624693-011	AM-BH26 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	7.4	7.3	1.36	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.3	5.3	0.00	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620370)									
EB1624693-022	AM-BH18 2-2.25	EA037: pH (F)	----	0.1	pH Unit	4.5	4.4	2.25	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.7	2.8	3.64	0% - 20%
EB1624693-032	AM-BH24 1.5-1.75	EA037: pH (F)	----	0.1	pH Unit	5.6	5.6	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.9	2.8	3.51	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620371)									
EB1624693-043	AM-BH10 1-1.25	EA037: pH (F)	----	0.1	pH Unit	7.8	7.8	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.8	2.9	3.51	0% - 20%
EB1624693-053	AM-BH32 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	4.6	4.6	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.6	2.5	3.92	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620372)									
EB1624693-063	AM-BH29 0-0.25	EA037: pH (F)	----	0.1	pH Unit	8.2	8.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	6.2	6.0	3.28	0% - 20%
EB1624693-073	AM-BH29 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	7.2	7.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.1	2.0	4.88	0% - 20%
EA055: Moisture Content (QC Lot: 620270)									
EB1624687-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	18.0	17.6	2.31	0% - 50%
EB1624766-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.0	9.8	1.20	No Limit
EA055: Moisture Content (QC Lot: 624690)									
EB1623981-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	4.8	4.6	4.61	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 624690) - continued									
EB1623981-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	25.5	26.2	2.67	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 620694)									
EB1624766-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	9	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	11	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	6	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	13	23.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	33	34	0.00	No Limit
EB1624693-002	AM-BH26 0.25-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	211	# 264	22.2	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	82	99	19.1	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	70	86	21.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	40	21.2	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 620696)									
EB1624693-075	AM-BH29 0-0.1	EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	1.8	2.2	20.8	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 620695)									
EB1624778-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1624693-002	AM-BH26 0.25-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620261)									
EB1624693-002	AM-BH26 0.25-0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620261) - continued									
EB1624693-002	AM-BH26 0.25-0.5	EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 620262)									
EB1624693-002	AM-BH26 0.25-0.5	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 620262)									
EB1624693-002	AM-BH26 0.25-0.5	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620263)									
EB1624693-002	AM-BH26 0.25-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 621845) - continued									
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 621845) - continued									
EB1624693-064	AM-BH29 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620694)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	113	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	103	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	111	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	93.3	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	103	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	102	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	109	87	127
EG020T: Total Metals by ICP-MS (QCLot: 620696)								
EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	<0.5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620695)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	99.7	78	122
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	82.8	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	79.9	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	77.2	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	72.4	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.2	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	94.1	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.5	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.7	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	83.7	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	76.3	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.0	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	70.9	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	91.4	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	55	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261) - continued								
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	104	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620262)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	97.4	47	112
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	106	55	108
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620262)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	93.1	46	115
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	109	53	113
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620263)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	89.5	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	101	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	90.5	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	96.8	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	81.3	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	90.7	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	101	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	99.4	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	90.9	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	98.6	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	84.3	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	82.4	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	69.0	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	65.9	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	73.7	64	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	85.1	66	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620268)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	82.7	66	119
EP080: BTEXN (QCLot: 620268)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	82.6	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	98.7	73	105

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP080: BTEXN (QCLot: 620268) - continued								
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	97.6	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	102	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	101	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	97.2	72	115
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 621845)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	67.8	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.3	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.8	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.7	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.8	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	64.8	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 621845)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00125 mg/kg	94.7	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.8	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	121	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.6	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.6	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	63.0	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.1	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 621845)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.6	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.4	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.6	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	86.3	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	68.2	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.3	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	107	61	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	102	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	109	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 620694)							
EB1624693-015	AM-BH18 0.25-0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	103	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	110	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	110	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	101	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	108	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	116	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	103	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620695)							
EB1624693-015	AM-BH18 0.25-0.5	EG035T: Mercury	7439-97-6	2.5 mg/kg	93.7	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261)							
EB1624693-015	AM-BH18 0.25-0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	95.1	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	110	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	106	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	102	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	93.1	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	85.2	70	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620262)							
EB1624693-015	AM-BH18 0.25-0.5	EP071SG-S: C10 - C14 Fraction	----	318 mg/kg	97.2	47	130
		EP071SG-S: C15 - C28 Fraction	----	531 mg/kg	104	55	130
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620262)							
EB1624693-015	AM-BH18 0.25-0.5	EP071SG-S: >C10 - C16 Fraction	----	428 mg/kg	91.6	46	130
		EP071SG-S: >C16 - C34 Fraction	----	395 mg/kg	108	53	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620263)							
EB1624693-015	AM-BH18 0.25-0.5	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	103	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	114	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268) - continued							
EB1624693-015	AM-BH18 0.25-0.5	EP080: C6 - C9 Fraction	----	8 mg/kg	91.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620268)							
EB1624693-015	AM-BH18 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	91.8	70	130
EP080: BTEXN (QCLot: 620268)							
EB1624693-015	AM-BH18 0.25-0.5	EP080: Benzene	71-43-2	2 mg/kg	73.0	70	130
		EP080: Toluene	108-88-3	2 mg/kg	77.2	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	52.5	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	62.8	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	74.7	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	75.0	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	90.2	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.00125 mg/kg	82.4	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00125 mg/kg	91.2	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	55.5	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	80.0	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	100.0	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	77.1	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	96.7	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	106	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.8	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	101	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	103	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	75.0	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	95.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	85.6	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	73.3	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.00312 mg/kg	51.5	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	47.2	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	117	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	88.6	30	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	98.8	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	66.0	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	112	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	111	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1624693**	Page	: 1 of 9
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Site	: Brisbane Airport	Issue Date	: 21-Oct-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 74
Order number	: 1538021	No. of samples analysed	: 73

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB1624693--002	AM-BH26 0.25-0.5	**Chromium**	7440-47-3	22.2 %	0% - 20%	**RPD exceeds LOR based limits**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH26 0-0.25,	AM-BH26 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	04-Apr-2017	✓	**18-Oct-2016**	04-Apr-2017	✓
AM-BH26 0.5-0.75,	AM-BH26 0.75-1,							
AM-BH26 1-1.25,	AM-BH26 1.25-1.5,							
AM-BH26 1.5-1.75,	AM-BH26 1.75-2,							
AM-BH26 2-2.25,	AM-BH26 2.25-2.5,							
AM-BH26 2.5-2.75,	AM-BH26 2.75-3,							
AM-BH18 0-0.25,	AM-BH18 0.25-0.5,							
AM-BH18 0.5-0.75,	AM-BH18 0.75-1,							
AM-BH18 1-1.25,	AM-BH18 1.25-1.5,							
AM-BH18 1.5-1.75,	AM-BH18 1.75-2,							
AM-BH18 2-2.25,	AM-BH18 2.25-2.5,							
AM-BH18 2.5-2.75,	AM-BH18 2.75-3,							
AM-BH24 0-0.25,	AM-BH24 0.25-0.5,							
AM-BH24 0.5-0.75,	AM-BH24 0.75-1,							
AM-BH24 1-1.25,	AM-BH24 1.25-1.5,							
AM-BH24 1.5-1.75,	AM-BH24 1.75-2,							
AM-BH24 2-2.25,	AM-BH24 2.25-2.5,							
AM-BH24 2.5-2.75,	AM-BH24 2.75-3,							
AM-BH10 0-0.25,	AM-BH10 0.25-0.5,							
AM-BH10 0.5-0.75,	AM-BH10 0.75-1,							
AM-BH10 1-1.25,	AM-BH10 1.25-1.5,							
AM-BH10 1.5-1.75,	AM-BH10 1.75-2,							
AM-BH10 2-2.25,	AM-BH10 2.25-2.5,							
AM-BH10 2.5-2.75,	AM-BH10 2.75-3							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis - Continued								
Snap Lock Bag - frozen (EA037)								
AM-BH29 0-0.25,	AM-BH29 0.25-0.5,	**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓
AM-BH29 0.5-0.75,	AM-BH29 0.75-1,							
AM-BH29 1-1.25,	AM-BH29 1.25-1.5,							
AM-BH29 1.5-1.75,	AM-BH29 1.75-2,							
AM-BH29 2-2.25,	AM-BH29 2.25-2.5,							
AM-BH29 2.5-2.75,	AM-BH29 2.75-3							
Snap Lock Bag - frozen (EA037)								
AM-BH32 0-0.25,	AM-BH32 0.25-0.5,	**10-Oct-2016**	**18-Oct-2016**	08-Apr-2017	✓	**18-Oct-2016**	08-Apr-2017	✓
AM-BH32 0.5-0.75,	AM-BH32 0.75-1,							
AM-BH32 1-1.25,	AM-BH32 1.25-1.5,							
AM-BH32 1.5-1.75,	AM-BH32 1.75-2,							
AM-BH32 2-2.25,	AM-BH32 2.25-2.5,							
AM-BH32 2.5-2.75,	AM-BH32 2.75-3							
EA055: Moisture Content								
Snap Lock Bag - frozen (EA055-103)								
AM-BH26 2.75-3,	AM-BH18 1.75-2,	**06-Oct-2016**	**----**	----	----	**20-Oct-2016**	20-Oct-2016	✓
AM-BH24 2.75-3,	AM-BH10 1.75-2							
Snap Lock Bag - frozen (EA055-103)								
AM-BH29 1.75-2		**07-Oct-2016**	**----**	----	----	**20-Oct-2016**	21-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103)								
AM-BH32 2.75-3		**10-Oct-2016**	**----**	----	----	**20-Oct-2016**	24-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**----**	----	----	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH29 0.25-0.5,	AM-BH29 0-0.1	**07-Oct-2016**	**----**	----	----	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**----**	----	----	**18-Oct-2016**	24-Oct-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	04-Apr-2017	✓	**18-Oct-2016**	04-Apr-2017	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH29 0.25-0.5,	AM-BH29 0-0.1	**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	08-Apr-2017	✓	**18-Oct-2016**	08-Apr-2017	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020R-T)								
AM-BH29 0-0.1		**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	03-Nov-2016	✓	**19-Oct-2016**	03-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T) AM-BH29 0.25-0.5, AM-BH29 0-0.1	**07-Oct-2016**	**18-Oct-2016**	04-Nov-2016	✓	**19-Oct-2016**	04-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	07-Nov-2016	✓	**19-Oct-2016**	07-Nov-2016	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup							
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup							
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	8	72	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite R	EG020R-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020. Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

Preparation Methods	Method	Matrix	Method Descriptions
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre:	scurti@golder.com.au

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147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
1	AM-BH26	0	0.25	soil	6/10/2016		bag		1	N		X	X						
2	AM-BH26	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X			
3	AM-BH26	0.5	0.75	soil	6/10/2016		bag		1	N		X	X						
4	AM-BH26	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X						
5	AM-BH26	1	1.25	soil	6/10/2016		bag		1	N		X	X						
6	AM-BH26	1.25	1.5	soil	6/10/2016		bag		1	N		X	X						
7	AM-BH26	1.5	1.75	soil	6/10/2016		bag		1	N		X	X						
8	AM-BH26	1.75	2	soil	6/10/2016		bag+2 jars		3	N		X	X						
9	AM-BH26	2	2.25	soil	6/10/2016		bag		1	N		X	X						
10	AM-BH26	2.25	2.5	soil	6/10/2016		bag		1	N		X	X						
11	AM-BH26	2.5	2.75	soil	6/10/2016		bag		1	N		X	X						
12	AM-BH26	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			X			
13	AM-BH26	0	0.1	soil	6/10/2016		jar		1	N							X	X	X

Environmental Division
Brisbane
Work Order Reference
EB1624693

Telephone : + 61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Container		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project Number:	1538021	Quote/Order No.:	EN/002/15
Project Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400

Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
14	AM-BH18	0	0.25	soil	6/10/2016		bag		1	N		X	X			
15	AM-BH18	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
16	AM-BH18	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
17	AM-BH18	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
18	AM-BH18	1	1.25	soil	6/10/2016		bag		1	N		X	X			
19	AM-BH18	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
20	AM-BH18	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
21	AM-BH18	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			X
22	AM-BH18	2	2.25	soil	6/10/2016		bag		1	N		X	X			
23	AM-BH18	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
24	AM-BH18	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
25	AM-BH18	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

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	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analyzing Laboratory

LAB BATCH NUMBER

Security Seal: Chilled: Bill to:

Suitable Containers: Frozen: Address:

Condition: Ambient:

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project Number:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

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	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
26	AM-BH24	0	0.25	soil	6/10/2016		bag		1	N		X	X			
27	AM-BH24	0.25	0.5	soil	6/10/2016		bag+2jars		3	N		X	X	X	X	X
28	AM-BH24	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
29	AM-BH24	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
30	AM-BH24	1	1.25	soil	6/10/2016		bag		1	N		X	X			
31	AM-BH24	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
32	AM-BH24	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
33	AM-BH24	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
34	AM-BH24	2	2.25	soil	6/10/2016		bag		1	N		X	X			
35	AM-BH24	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
36	AM-BH24	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
37	AM-BH24	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			
38	AM-BH24	1.1	1.2	soil	6/10/2016		jar		1	N	X					

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

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RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14/10		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

Security Seal		Chilled	LAB BATCH NUMBER		
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Location:	1538021	Quote/Order No:	EN/002/15
Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Comments/Special Instructions:

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	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
39	AM-BH10	0	0.25	soil	6/10/2016		bag	1	N		X	X			
40	AM-BH10	0.25	0.5	soil	6/10/2016		bag+2jar	3	N		X	X	X	X	X
41	AM-BH10	0.5	0.75	soil	6/10/2016		bag	1	N		X	X			
42	AM-BH10	0.75	1	soil	6/10/2016		bag+jar	2	N		X	X			
43	AM-BH10	1	1.25	soil	6/10/2016		bag	1	N		X	X			
44	AM-BH10	1.25	1.5	soil	6/10/2016		bag	1	N		X	X			
45	AM-BH10	1.5	1.75	soil	6/10/2016		bag	1	N		X	X			
46	AM-BH10	1.75	2	soil	6/10/2016		bag+jar	2	N		X	X			X
47	AM-BH10	2	2.25	soil	6/10/2016		bag	1	N		X	X			
48	AM-BH10	2.25	2.5	soil	6/10/2016		bag	1	N		X	X			
49	AM-BH10	2.5	2.75	soil	6/10/2016		bag	1	N		X	X			
50	AM-BH10	2.75	3	soil	6/10/2016		bag+jar	2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14/10		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Sealing Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

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Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Golder Associates

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
51	AM-BH32	0	0.25	soil	10/10/2016		bag		1	N		X	X			
52	AM-BH32	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
53	AM-BH32	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
54	AM-BH32	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			
55	AM-BH32	1	1.25	soil	10/10/2016		bag		1	N		X	X			
56	AM-BH32	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
57	AM-BH32	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
58	AM-BH32	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			
59	AM-BH32	2	2.25	soil	10/10/2016		bag		1	N		X	X			
60	AM-BH32	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
61	AM-BH32	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
62	AM-BH32	2.75	3	soil	10/10/2016		bag+jar		2	N		X	X			X

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		Chilled	LAB BATCH NUMBER		
Suitable Containers		Frozen	Bill to:		
Cool Box		Ambient	Address		

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Job Number:	1538021	Quote/Order No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
63 AM-BH29	0	0.25	soil	7/10/2016		bag		1	N		X	X						
64 AM-BH29	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
65 AM-BH29	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
66 AM-BH29	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
67 AM-BH29	1	1.25	soil	7/10/2016		bag		1	N		X	X						
68 AM-BH29	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
69 AM-BH29	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
70 AM-BH29	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X			X			
71 AM-BH29	2	2.25	soil	7/10/2016		bag		1	N		X	X						
72 AM-BH29	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
73 AM-BH29	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
74 AM-BH29	2.75	3	soil	7/10/2016		bag+jar		2	N		X	X						
75 AM-BH29	0	0.1	soil	7/10/2016		jar		1	N							X	X	X

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER		
RECEIVED BY	CHRES	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

TO BE Filled Out By Analytical Laboratory

Security Seal		Chilled		LAB BATCH NUMBER	
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STA[illegible] ON RECEIPT OF SAMPLES.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1624693**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 4
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 14-Oct-2016 4:00 PM	Issue Date	: 17-Oct-2016
Client Requested Due Date	: 21-Oct-2016	Scheduled Reporting Date	: **21-Oct-2016**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 0.1°C, 0.4°C, 1.2°C
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 74 / 73

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please be advised that sample "AM-BH26 0-0.1" was not received at the laboratory (denoted SNR on the scanned COC).**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH
EB1624693-001	[06-Oct-2016]	AM-BH26 0-0.25		✓					
EB1624693-002	[06-Oct-2016]	AM-BH26 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-003	[06-Oct-2016]	AM-BH26 0.5-0.75		✓					
EB1624693-004	[06-Oct-2016]	AM-BH26 0.75-1		✓					
EB1624693-005	[06-Oct-2016]	AM-BH26 1-1.25		✓					
EB1624693-006	[06-Oct-2016]	AM-BH26 1.25-1.5		✓					
EB1624693-007	[06-Oct-2016]	AM-BH26 1.5-1.75		✓					
EB1624693-008	[06-Oct-2016]	AM-BH26 1.75-2		✓					
EB1624693-009	[06-Oct-2016]	AM-BH26 2-2.25		✓					
EB1624693-010	[06-Oct-2016]	AM-BH26 2.25-2.5		✓					
EB1624693-011	[06-Oct-2016]	AM-BH26 2.5-2.75		✓					
EB1624693-012	[06-Oct-2016]	AM-BH26 2.75-3		✓	✓		✓		
EB1624693-014	[06-Oct-2016]	AM-BH18 0-0.25		✓					
EB1624693-015	[06-Oct-2016]	AM-BH18 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-016	[06-Oct-2016]	AM-BH18 0.5-0.75		✓					
EB1624693-017	[06-Oct-2016]	AM-BH18 0.75-1		✓					
EB1624693-018	[06-Oct-2016]	AM-BH18 1-1.25		✓					
EB1624693-019	[06-Oct-2016]	AM-BH18 1.25-1.5		✓					
EB1624693-020	[06-Oct-2016]	AM-BH18 1.5-1.75		✓					
EB1624693-021	[06-Oct-2016]	AM-BH18 1.75-2		✓	✓		✓		
EB1624693-022	[06-Oct-2016]	AM-BH18 2-2.25		✓					
EB1624693-023	[06-Oct-2016]	AM-BH18 2.25-2.5		✓					
EB1624693-024	[06-Oct-2016]	AM-BH18 2.5-2.75		✓					
EB1624693-025	[06-Oct-2016]	AM-BH18 2.75-3		✓					
EB1624693-026	[06-Oct-2016]	AM-BH24 0-0.25		✓					
EB1624693-027	[06-Oct-2016]	AM-BH24 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-028	[06-Oct-2016]	AM-BH24 0.5-0.75		✓					
EB1624693-029	[06-Oct-2016]	AM-BH24 0.75-1		✓					
EB1624693-030	[06-Oct-2016]	AM-BH24 1-1.25		✓					
EB1624693-031	[06-Oct-2016]	AM-BH24 1.25-1.5		✓					
EB1624693-032	[06-Oct-2016]	AM-BH24 1.5-1.75		✓					
EB1624693-033	[06-Oct-2016]	AM-BH24 1.75-2		✓					
EB1624693-034	[06-Oct-2016]	AM-BH24 2-2.25		✓					
EB1624693-035	[06-Oct-2016]	AM-BH24 2.25-2.5		✓					
EB1624693-036	[06-Oct-2016]	AM-BH24 2.5-2.75		✓					

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH
EB1624693-037	[06-Oct-2016]	AM-BH24 2.75-3		✓	✓		✓		
EB1624693-038	[06-Oct-2016]	AM-BH24 1.1-1.2	✓						
EB1624693-039	[06-Oct-2016]	AM-BH10 0-0.25		✓					
EB1624693-040	[06-Oct-2016]	AM-BH10 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-041	[06-Oct-2016]	AM-BH10 0.5-0.75		✓					
EB1624693-042	[06-Oct-2016]	AM-BH10 0.75-1		✓					
EB1624693-043	[06-Oct-2016]	AM-BH10 1-1.25		✓					
EB1624693-044	[06-Oct-2016]	AM-BH10 1.25-1.5		✓					
EB1624693-045	[06-Oct-2016]	AM-BH10 1.5-1.75		✓					
EB1624693-046	[06-Oct-2016]	AM-BH10 1.75-2		✓	✓		✓		
EB1624693-047	[06-Oct-2016]	AM-BH10 2-2.25		✓					
EB1624693-048	[06-Oct-2016]	AM-BH10 2.25-2.5		✓					
EB1624693-049	[06-Oct-2016]	AM-BH10 2.5-2.75		✓					
EB1624693-050	[06-Oct-2016]	AM-BH10 2.75-3		✓					
EB1624693-051	[10-Oct-2016]	AM-BH32 0-0.25		✓					
EB1624693-052	[10-Oct-2016]	AM-BH32 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-053	[10-Oct-2016]	AM-BH32 0.5-0.75		✓					
EB1624693-054	[10-Oct-2016]	AM-BH32 0.75-1		✓					
EB1624693-055	[10-Oct-2016]	AM-BH32 1-1.25		✓					
EB1624693-056	[10-Oct-2016]	AM-BH32 1.25-1.5		✓					
EB1624693-057	[10-Oct-2016]	AM-BH32 1.5-1.75		✓					
EB1624693-058	[10-Oct-2016]	AM-BH32 1.75-2		✓					
EB1624693-059	[10-Oct-2016]	AM-BH32 2-2.25		✓					
EB1624693-060	[10-Oct-2016]	AM-BH32 2.25-2.5		✓					
EB1624693-061	[10-Oct-2016]	AM-BH32 2.5-2.75		✓					
EB1624693-062	[10-Oct-2016]	AM-BH32 2.75-3		✓	✓		✓		
EB1624693-063	[07-Oct-2016]	AM-BH29 0-0.25		✓					
EB1624693-064	[07-Oct-2016]	AM-BH29 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-065	[07-Oct-2016]	AM-BH29 0.5-0.75		✓					
EB1624693-066	[07-Oct-2016]	AM-BH29 0.75-1		✓					
EB1624693-067	[07-Oct-2016]	AM-BH29 1-1.25		✓					
EB1624693-068	[07-Oct-2016]	AM-BH29 1.25-1.5		✓					
EB1624693-069	[07-Oct-2016]	AM-BH29 1.5-1.75		✓					
EB1624693-070	[07-Oct-2016]	AM-BH29 1.75-2		✓	✓		✓		
EB1624693-071	[07-Oct-2016]	AM-BH29 2-2.25		✓					
EB1624693-072	[07-Oct-2016]	AM-BH29 2.25-2.5		✓					
EB1624693-073	[07-Oct-2016]	AM-BH29 2.5-2.75		✓					
EB1624693-074	[07-Oct-2016]	AM-BH29 2.75-3		✓					
EB1624693-075	[07-Oct-2016]	AM-BH29 0-0.1			✓			✓	

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG020R-T Total Metals by ICPMS - Suite R
EB1624693-075	[07-Oct-2016]	AM-BH29 0-0.1	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au

SERENA CURTI

- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1624749**	Page	: 1 of 105
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016 16:00
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 25-Oct-2016 13:16
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 90		
No. of samples analysed	: 85		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Matt Frost	Senior Organic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005T (Total Metals): Sample EB1624685-033 shows poor matrix spike recovery due to sample heterogeneity. Confirmed by visual inspection.
- EG035T (Total Mercury): Sample EB1624685-033 shows poor spike recovery due to sample heterogeneity. Confirmed by visual inspection
- EP068 Pesticides: Sample 'AM-BH14 0.25-0.5' shows poor matrix spike recovery for 4,4/ due to matrix interference. Confirmed by re-extraction and re-analysis.
- EP068 Pesticides: High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- EP075(SIM): High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.6	7.6	6.9	7.1
ø pH (Fox)	----	0.1	pH Unit	5.2	5.6	5.7	5.2	4.4
ø Reaction Rate	----	1	-	1	2	2	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	9.8	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	7	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	9	----	----	----
Copper	7440-50-8	5	mg/kg	----	23	----	----	----
Lead	7439-92-1	5	mg/kg	----	14	----	----	----
Nickel	7440-02-0	2	mg/kg	----	9	----	----	----
Zinc	7440-66-6	5	mg/kg	----	30	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	114	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	102	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	122	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	118	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	100	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	121	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	113	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	132	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	99.4	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	84.9	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	88.2	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	93.7	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.8	5.9	5.0	5.7
ø pH (Fox)	----	0.1	pH Unit	4.2	4.4	3.0	3.4	3.3
ø Reaction Rate	----	1	-	3	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.7	6.5	7.0	7.8	5.9
ø pH (Fox)	----	0.1	pH Unit	3.4	4.8	4.7	6.0	2.7
ø Reaction Rate	----	1	-	2	2	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.2	----	11.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	8	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	21	----
Copper	7440-50-8	5	mg/kg	----	----	----	24	----
Lead	7439-92-1	5	mg/kg	----	----	----	13	----
Nickel	7440-02-0	2	mg/kg	----	----	----	14	----
Zinc	7440-66-6	5	mg/kg	----	----	----	40	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	**119**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	**112**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	**116**	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	**109**	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	**95.1**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	**116**	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	**108**	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	**132**	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	**94.1**	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	**79.3**	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	**92.0**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	**96.0**	----	**104**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.3	5.2	8.0	5.5	5.7
ø pH (Fox)	----	0.1	pH Unit	2.4	2.5	3.2	2.9	3.0
ø Reaction Rate	----	1	-	4	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	6.8	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**90.5**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	7.2	7.2	7.3	7.0
ø pH (Fox)	----	0.1	pH Unit	5.0	5.6	5.7	5.7	1.8
ø Reaction Rate	----	1	-	2	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.0	6.5	7.2	7.0	7.3
ø pH (Fox)	----	0.1	pH Unit	5.4	4.4	5.0	4.8	4.8
ø Reaction Rate	----	1	-	3	2	3	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	23.9	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	14	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	41	----	----	----	----
Copper	7440-50-8	5	mg/kg	22	----	----	----	----
Lead	7439-92-1	5	mg/kg	10	----	----	----	----
Nickel	7440-02-0	2	mg/kg	39	----	----	----	----
Zinc	7440-66-6	5	mg/kg	90	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**113**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**106**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**108**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**105**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**102**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**103**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**110**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**123**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**99.0**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**89.6**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**97.4**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**96.0**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.1	6.9	6.9	7.0	7.0
ø pH (Fox)	----	0.1	pH Unit	4.6	4.4	4.2	4.4	2.5
ø Reaction Rate	----	1	-	3	3	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.4	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	94.3	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.3	----	----	7.2	6.3
ø pH (Fox)	----	0.1	pH Unit	2.5	----	----	3.1	4.3
ø Reaction Rate	----	1	-	4	----	----	3	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	16.8	23.4	----	24.2
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	8	13	----	<5
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg	----	46	39	----	55
Copper	7440-50-8	5	mg/kg	----	34	31	----	20
Lead	7439-92-1	5	mg/kg	----	10	17	----	6
Nickel	7440-02-0	2	mg/kg	----	52	59	----	18
Zinc	7440-66-6	5	mg/kg	----	56	236	----	33
Titanium	7440-32-6	10	mg/kg	----	360	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	1.4	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	<0.05	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	<0.2	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Diazinon	333-41-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	<0.05	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	<0.2	----	<0.2
Malathion	121-75-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Fenthion	55-38-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Parathion	56-38-2	0.2	mg/kg	----	----	<0.2	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	----	----	<0.05	----	<0.05
Ethion	563-12-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	<0.05	----	<0.05
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**0.6**	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.2**	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	<10
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	<0.001	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	**112**	----	**116**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	**101**	----	**106**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	**109**	----	**119**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	**103**	----	**110**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	**97.8**	----	**106**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	**104**	----	**103**
Anthracene-d10	1719-06-8	0.5	%	----	----	**104**	----	**113**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	**116**	----	**125**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	**98.0**	----	**110**
Toluene-D8	2037-26-5	0.2	%	----	----	**86.8**	----	**90.0**
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	**95.4**	----	**101**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	**101**	----	**92.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.5	5.3	5.9	6.4	6.7
ø pH (Fox)	----	0.1	pH Unit	2.6	3.2	3.8	3.4	3.5
ø Reaction Rate	----	1	-	2	2	2	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.3	6.2	6.5	6.4	7.1
ø pH (Fox)	----	0.1	pH Unit	3.7	3.6	3.3	1.7	2.2
ø Reaction Rate	----	1	-	3	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	23.9
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	91.6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	6.7	4.3	5.9
ø pH (Fox)	----	0.1	pH Unit	----	----	3.8	4.6	4.0
ø Reaction Rate	----	1	-	----	----	3	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	19.1	23.7	----	11.6	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	11	8	----	10	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	----
Chromium	7440-47-3	2	mg/kg	37	54	----	54	----
Copper	7440-50-8	5	mg/kg	25	30	----	41	----
Lead	7439-92-1	5	mg/kg	17	13	----	15	----
Nickel	7440-02-0	2	mg/kg	18	33	----	31	----
Zinc	7440-66-6	5	mg/kg	65	42	----	44	----
Titanium	7440-32-6	10	mg/kg	340	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	3.0	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	**0.0004**	----	**0.0005**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	**0.0004**	----	**0.0020**	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	0.0008	----	0.0025	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	0.0008	----	0.0025	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	0.0008	----	0.0025	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	115	----	108	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	103	----	98.5	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	119	----	117	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	109	----	108	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	102	----	94.1	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	105	----	116	----
Anthracene-d10	1719-06-8	0.5	%	----	113	----	117	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	132	----	128	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	104	----	93.1	----
Toluene-D8	2037-26-5	0.2	%	----	89.4	----	83.0	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	97.6	----	83.7	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	95.2	----	93.4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.9	6.0	6.1	4.7	5.9
ø pH (Fox)	----	0.1	pH Unit	3.2	3.5	4.1	2.9	4.5
ø Reaction Rate	----	1	-	3	3	3	2	1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.6	----	4.5	3.9	4.2
ø pH (Fox)	----	0.1	pH Unit	5.4	----	2.8	2.2	2.5
ø Reaction Rate	----	1	-	2	----	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	25.2	28.6	----	15.1	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	8	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	39	----
Copper	7440-50-8	5	mg/kg	----	----	----	16	----
Lead	7439-92-1	5	mg/kg	----	----	----	12	----
Nickel	7440-02-0	2	mg/kg	----	----	----	24	----
Zinc	7440-66-6	5	mg/kg	----	----	----	54	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	104	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	98.4	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	113	----	104	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	102	----	97.1	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	106	----	91.9	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	100	----	110	----
Anthracene-d10	1719-06-8	0.5	%	----	111	----	115	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	116	----	122	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	88.7	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	77.2	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	85.4	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	91.5	----	----	86.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.4	6.4	6.8	7.1	7.2
ø pH (Fox)	----	0.1	pH Unit	3.8	4.2	4.0	1.8	1.8
ø Reaction Rate	----	1	-	2	3	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	34.4	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**86.4**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.0	8.1	8.2	5.2	4.2
ø pH (Fox)	----	0.1	pH Unit	2.4	2.0	2.0	3.0	2.4
ø Reaction Rate	----	1	-	4	4	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	17.5
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	19
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	<1
Chromium	7440-47-3	2	mg/kg	----	----	----	----	41
Copper	7440-50-8	5	mg/kg	----	----	----	----	20
Lead	7439-92-1	5	mg/kg	----	----	----	----	13
Nickel	7440-02-0	2	mg/kg	----	----	----	----	41
Zinc	7440-66-6	5	mg/kg	----	----	----	----	63
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	**0.0005**
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	**0.0005**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	**110**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	**100**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	**108**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	**99.3**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	**94.6**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	**113**
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	**118**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	**126**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	**100**
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	**79.5**
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	**94.5**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	**95.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	3.9	5.7	5.1	5.8	6.5
ø pH (Fox)	----	0.1	pH Unit	2.2	3.9	2.5	1.8	1.9
ø Reaction Rate	----	1	-	2	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.0	7.1	7.4	7.8	7.8
ø pH (Fox)	----	0.1	pH Unit	1.8	1.7	1.7	2.0	1.7
ø Reaction Rate	----	1	-	4	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	36.0	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**82.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	138
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	23	135
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	155
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	157
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1624749**	Page	: 1 of 19
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 25-Oct-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 90		
No. of samples analysed	: 85		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Matt Frost	Senior Organic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA037: Ass Field Screening Analysis (QC Lot: 621294)									
EB1624749-001	AM-BH13 0-0.25	EA037: pH (F)	----	0.1	pH Unit	7.4	7.4	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.2	5.1	1.94	0% - 20%
EB1624749-011	AM-BH13 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	5.7	5.5	3.57	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.4	3.5	2.90	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621295)									
EB1624749-021	AM-BH14 2-2.25	EA037: pH (F)	----	0.1	pH Unit	6.8	7.0	2.90	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.0	4.8	4.08	0% - 20%
EB1624749-031	AM-BH15 1.5-1.75	EA037: pH (F)	----	0.1	pH Unit	7.1	7.0	1.42	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.6	4.5	2.20	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621296)									
EB1624749-045	AM-BH16 1-1.25	EA037: pH (F)	----	0.1	pH Unit	5.9	5.8	1.71	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.8	3.8	0.00	0% - 20%
EB1624749-059	AM-BH25 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	5.9	6.0	1.68	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.0	3.9	2.53	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621297)									
EB1624749-070	AM-BH30 0.75-1	EA037: pH (F)	----	0.1	pH Unit	5.4	5.5	1.83	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.8	3.7	2.67	0% - 20%
EB1624749-081	AM-BH31 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	3.9	3.9	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.2	2.3	4.44	0% - 20%
EA055: Moisture Content (QC Lot: 620751)									
EB1624685-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	16.4	16.6	1.12	0% - 50%
EB1624685-023	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	3.8	3.9	0.00	No Limit
EA055: Moisture Content (QC Lot: 620757)									
EB1624749-002	AM-BH13 0.25-0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	9.8	9.6	2.30	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 620766)									
EB1624685-005	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	8.3	8.2	0.00	No Limit
EA055: Moisture Content (QC Lot: 624690)									
EB1623981-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	4.8	4.6	4.61	No Limit
EB1623981-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	25.5	26.2	2.67	0% - 20%
EA055: Moisture Content (QC Lot: 624691)									
EB1624749-052	AM-BH16 2.75-3	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	23.9	23.3	2.31	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 620763)									
EB1624685-032	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	25	25	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	12	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	54	53	0.00	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	31	31	0.00	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	11	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	41	40	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	16	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	44	44	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 620765)									
EB1624749-037	AM-BH15 0-0.1	EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	1.4	1.7	13.2	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 620764)									
EB1624685-032	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620748)									
EB1624685-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	0.08	0.07	14.7	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620748) - continued									
EB1624685-001	Anonymous	EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	0.08	0.07	13.3	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620755)									
EB1624749-002	AM-BH13 0.25-0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620755) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620748)									
EB1624685-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620755)									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620755) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 620754)									
EB1624749-002	AM-BH13 0.25-0.5	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 620754)									
EB1624749-002	AM-BH13 0.25-0.5	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620746)									
EB1624685-023	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EB1624685-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620746) - continued									
EB1624685-001	Anonymous	EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620753)									
EB1624749-002	AM-BH13 0.25-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620747)									
EB1624685-033	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	100	120	15.1	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1624685-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EB1624685-033	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620747)									
EB1624685-033	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	160	190	14.4	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1624685-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EB1624685-033	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EB1624685-033	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 624743) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0005	0.0006	18.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0020	0.0022	12.4	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 624743) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620763)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	93.9	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	102	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	95.9	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	105	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	102	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	109	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	104	87	127
EG020T: Total Metals by ICP-MS (QCLot: 620765)								
EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	<0.5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620764)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	100	78	122
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	101	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	85.1	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.8	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	103	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	102	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	106	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	107	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	100	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	110	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	97.5	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	80.2	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.4	55	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748) - continued								
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	98.1	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 620755)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	# 114	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	99.7	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.1	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	119	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	108	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	116	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	115	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	103	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	113	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	106	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	118	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	113	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.6	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	107	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	121	55	129
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	111	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	99.2	41	114
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	65.7	25	120
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	113	35	135
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	94.8	44	131
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.7	70	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748) - continued								
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	109	70	130
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	80.0	60	122
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	64	125
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	103	69	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.9	66	120
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	102	57	118
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	121	70	130
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	117	62	127
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	106	80	130
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	98.5	55	106
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	101	80	134
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	120	61	123
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	119	57	124
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	46.7	35	127
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620755)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	102	41	114
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	67.2	25	120
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	112	35	135
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	44	131
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	111	70	131
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	107	70	130
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	81.3	60	122
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	105	64	125
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	108	69	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	98.5	66	120
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	102	57	118
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	# 131	70	130
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	123	62	127
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	114	80	130
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	103	55	106
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	107	80	134
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	112	61	123
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	# 126	57	124
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	35.5	35	127
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	61.8	47	112
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	72.0	55	108
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620754)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	65.8	46	115
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	70.9	53	113
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620746)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	101	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	102	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	106	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	104	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	110	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	113	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	112	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	114	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	107	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	110	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	108	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	112	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	85.5	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	91.9	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	88.7	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	106	64	131
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620753)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	111	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	116	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	111	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	112	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	# 122	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	# 127	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	132	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	109	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	# 125	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	110	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	115	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	110	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	113	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	114	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	120	64	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620747)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	82.6	79	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	87.4	77	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620750)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	96.3	66	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620756)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	71.8	66	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620747)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	84.9	81	122
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	83.5	74	122
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620750)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	89.8	66	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620756)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	67.4	66	119
EP080: BTEXN (QCLot: 620750)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	90.9	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	97.1	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	92.5	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	94.6	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	98.7	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	101	72	115
EP080: BTEXN (QCLot: 620756)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	86.8	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.3	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	89.1	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	86.8	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.0	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	100	72	115
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	54	125

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 624743)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00125 mg/kg	83.2	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.0	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.3	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.4	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.3	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.4	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.6	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 624743)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	103	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.1	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.3	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.6	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.1	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.5	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 624743)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.1	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	90.0	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.4	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.6	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 620763)							
EB1624685-033	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	# Not Determined	70	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620763) - continued							
EB1624685-033	Anonymous	EG005T: Cadmium	7440-43-9	25 mg/kg	114	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	# Not Determined	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	# 9.19	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	97.1	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	123	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620764)							
EB1624685-033	Anonymous	EG035T: Mercury	7439-97-6	2.5 mg/kg	# 139	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748)							
EB1624685-007	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	97.6	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	90.7	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	97.4	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	104	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	103	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	81.4	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620755)							
EB1624749-014	AM-BH14 0.25-0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	70.5	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	84.5	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	74.9	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	90.2	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	94.2	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	# 57.7	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748)							
EB1624685-007	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	90.0	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	75.8	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	105	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	111	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	103	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620755)							
EB1624749-014	AM-BH14 0.25-0.5	EP068: Diazinon	333-41-5	0.5 mg/kg	89.6	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	86.5	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	107	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	95.6	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	93.6	70	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754) - continued							
EB1624749-014	AM-BH14 0.25-0.5	EP071SG-S: C10 - C14 Fraction	----	318 mg/kg	62.5	47	130
		EP071SG-S: C15 - C28 Fraction	----	531 mg/kg	68.3	55	130
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620754)							
EB1624749-014	AM-BH14 0.25-0.5	EP071SG-S: >C10 - C16 Fraction	----	428 mg/kg	64.4	46	130
		EP071SG-S: >C16 - C34 Fraction	----	395 mg/kg	66.8	53	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620746)							
EB1624685-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	101	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	110	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620753)							
EB1624749-014	AM-BH14 0.25-0.5	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	116	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	124	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620747)							
EB1624685-004	Anonymous	EP071: C10 - C14 Fraction	----	318 mg/kg	82.4	70	130
		EP071: C15 - C28 Fraction	----	531 mg/kg	87.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: C6 - C9 Fraction	----	8 mg/kg	95.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: C6 - C9 Fraction	----	8 mg/kg	78.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620747)							
EB1624685-004	Anonymous	EP071: >C10 - C16 Fraction	----	428 mg/kg	84.2	70	130
		EP071: >C16 - C34 Fraction	----	395 mg/kg	84.9	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	93.8	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	76.0	70	130
EP080: BTEXN (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	93.3	70	130
		EP080: Toluene	108-88-3	2 mg/kg	91.1	70	130
EP080: BTEXN (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: Benzene	71-43-2	2 mg/kg	80.5	70	130
		EP080: Toluene	108-88-3	2 mg/kg	76.5	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	75.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	77.1	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	72.6	50	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743) - continued							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	94.9	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	86.0	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.00125 mg/kg	81.3	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00125 mg/kg	67.8	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	82.2	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	67.8	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	90.2	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	109	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	112	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	102	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	114	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	91.6	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	105	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	94.9	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	99.4	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	89.7	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	89.9	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.00312 mg/kg	94.3	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	73.4	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	112	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	109	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	98.6	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	110	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	87.3	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	103	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1624749**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Site	: Brisbane Airport	Issue Date	: 25-Oct-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 90
Order number	: 1538021	No. of samples analysed	: 85

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	QC-620755-002	----	**Hexachlorobenzene (HCB)**	118-74-1	114 %	54-112%	**Recovery greater than upper control limit**
EP068B: Organophosphorus Pesticides (OP)	QC-620755-002	----	**Pirimphos-ethyl**	23505-41-1	131 %	70-130%	**Recovery greater than upper control limit**
EP068B: Organophosphorus Pesticides (OP)	QC-620755-002	----	**Carbophenothion**	786-19-6	126 %	57-124%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Anthracene**	120-12-7	122 %	72-115%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Fluoranthene**	206-44-0	127 %	70-116%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Chrysene**	218-01-9	125 %	66-119%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Arsenic**	7440-38-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Chromium**	7440-47-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Copper**	7440-50-8	9.19 %	70-130%	**Recovery less than lower data quality objective**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG035T: Total Recoverable Mercury by FIMS	EB1624685--033	Anonymous	**Mercury**	7439-97-6	139 %	70-130%	**Recovery greater than upper data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB1624749--014	AM-BH14 0.25-0.5	**4.4`-DDT**	50-29-3	57.7 %	70-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH13 0-0.25,	AM-BH13 0.25-0.5,	**06-Oct-2016**	**19-Oct-2016**	04-Apr-2017	✓	**19-Oct-2016**	04-Apr-2017	✓
AM-BH13 0.5-0.75,	AM-BH13 0.75-1,							
AM-BH13 1-1.25,	AM-BH13 1.25-1.5,							
AM-BH13 1.5-1.75,	AM-BH13 1.75-2,							
AM-BH13 2-2.25,	AM-BH13 2.25-2.5,							
AM-BH13 2.5-2.75,	AM-BH13 2.75-3,							
AM-BH14 0-0.25,	AM-BH14 0.25-0.5,							
AM-BH14 0.5-0.75,	AM-BH14 0.75-1,							
AM-BH14 1-1.25,	AM-BH14 1.25-1.5,							
AM-BH14 1.5-1.75,	AM-BH14 1.75-2,							
AM-BH14 2-2.25,	AM-BH14 2.25-2.5,							
AM-BH14 2.5-2.75,	AM-BH14 2.75-3							
Snap Lock Bag - frozen (EA037)								
AM-BH15 0-0.25,	AM-BH15 0.25-0.5,	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓
AM-BH15 0.5-0.75,	AM-BH15 0.75-1,							
AM-BH15 1-1.25,	AM-BH15 1.25-1.5,							
AM-BH15 1.5-1.75,	AM-BH15 1.75-2,							
AM-BH15 2-2.25,	AM-BH15 2.25-2.5,							
AM-BH15 2.5-2.75,	AM-BH15 2.75-3,							
AM-BH16 0-0.25,	AM-BH16 0.25-0.5,							
AM-BH16 0.5-0.75,	AM-BH16 0.75-1,							
AM-BH16 1-1.25,	AM-BH16 1.25-1.5,							
AM-BH16 1.5-1.75,	AM-BH16 1.75-2,							
AM-BH16 2-2.25,	AM-BH16 2.25-2.5,							
AM-BH16 2.5-2.75,	AM-BH16 2.75-3,							
AM-BH25 0-0.25,	AM-BH25 0.25-0.5,							
AM-BH25 0.5-0.75,	AM-BH25 1.5-1.75,							
AM-BH25 1.75-2,	AM-BH25 2-2.25,							
AM-BH25 2.25-2.5,	AM-BH25 2.5-2.75,							
AM-BH25 2.75-3								
Snap Lock Bag - frozen (EA037)								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis - Continued								
AM-BH30 0-0.25, AM-BH30 0.5-0.75, AM-BH30 1-1.25, AM-BH30 1.5-1.75, AM-BH30 2-2.25, AM-BH30 2.5-2.75, AM-BH31 0.25-0.5, AM-BH31 0.75-1, AM-BH31 1.25-1.5, AM-BH31 1.75-2, AM-BH31 2.25-2.5, AM-BH31 2.75-3	AM-BH30 0.25-0.5, AM-BH30 0.75-1, AM-BH30 1.25-1.5, AM-BH30 1.75-2, AM-BH30 2.25-2.5, AM-BH31 0-0.25, AM-BH31 0.5-0.75, AM-BH31 1-1.25, AM-BH31 1.5-1.75, AM-BH31 2-2.25, AM-BH31 2.5-2.75,	**10-Oct-2016**	**19-Oct-2016**	08-Apr-2017	✓	**19-Oct-2016**	08-Apr-2017	✓
EA055: Moisture Content								
Snap Lock Bag - frozen (EA055-103) AM-BH13 2.75-3,	AM-BH14 0.75-1	**06-Oct-2016**	**----**	----	----	**20-Oct-2016**	20-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103) AM-BH15 1.75-2, AM-BH25 2.75-3	AM-BH16 2.75-3,	**07-Oct-2016**	**----**	----	----	**20-Oct-2016**	21-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103) AM-BH30 0.75-1,	AM-BH31 1.75-2	**10-Oct-2016**	**----**	----	----	**20-Oct-2016**	24-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**----**	----	----	**18-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0-0.1, AM-BH25 0.25-0.5,	AM-BH15 0-0.1, AM-BH16 0.25-0.5, QAQC001, AM-BH25 0.5-0.6	**07-Oct-2016**	**----**	----	----	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**----**	----	----	**18-Oct-2016**	24-Oct-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**19-Oct-2016**	04-Apr-2017	✓	**19-Oct-2016**	04-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0-0.1, AM-BH25 0.25-0.5	AM-BH15 0-0.1, AM-BH16 0.25-0.5, QAQC001,	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T) AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**19-Oct-2016**	08-Apr-2017	✓	**19-Oct-2016**	08-Apr-2017	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020R-T) AM-BH15 0-0.1,	AM-BH16 0-0.1	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**19-Oct-2016**	03-Nov-2016	✓	**19-Oct-2016**	03-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH15 0.25-0.5,	AM-BH15 0-0.1,	**07-Oct-2016**	**19-Oct-2016**	04-Nov-2016	✓	**19-Oct-2016**	04-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 0-0.1,	QAQC001,							
AM-BH25 0.25-0.5								
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**19-Oct-2016**	07-Nov-2016	✓	**19-Oct-2016**	07-Nov-2016	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
AM-BH16 0.25-0.5,	QAQC001							
Soil Glass Jar - Unpreserved (EP068)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
AM-BH16 0.25-0.5,	QAQC001							
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.5-0.6								
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.25-0.5								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.25-0.5								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.25-0.5								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	8	80	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	7	58	12.07	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	3	25	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	21	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
TRH - Semivolatile Fraction	EP071	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite R	EG020R-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020. Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab. Name:	ALS Environmental
Sampler By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐	EMAIL ☑ BULLETIN BOARD ☐	
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre: scurti@golder.com.au	

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Golder Associates
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
1	AM-BH13	0	0.25	soil	6/10/2016		bag		1	N		X	X			
2	AM-BH13	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
3	AM-BH13	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
4	AM-BH13	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
5	AM-BH13	1	1.25	soil	6/10/2016		bag		1	N		X	X			
6	AM-BH13	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
7	AM-BH13	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
8	AM-BH13	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
9	AM-BH13	2	2.25	soil	6/10/2016		bag		1	N		X	X			
10	AM-BH13	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
11	AM-BH13	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
12	AM-BH13	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			X

Environmental Division
Brisbane
Work Order Reference
EB1624749

Telephone : + 61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

TYPE OF SEAL & ORDER Analytical Laboratory LAB BATCH NUMBER

Security Seal Chilled Bill to:

Sample Container Frozen Address

Cool Box Ambient

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORAT

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project No:	1538021	Order/Job No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

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13	AM-BH14	0	0.25	soil	6/10/2016		bag		1	N		X	X			
14	AM-BH14	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
15	AM-BH14	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
16	AM-BH14	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
17	AM-BH14	1	1.25	soil	6/10/2016		bag		1	N		X	X			X
18	AM-BH14	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
19	AM-BH14	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
20	AM-BH14	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
21	AM-BH14	2	2.25	soil	6/10/2016		bag		1	N		X	X			
22	AM-BH14	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
23	AM-BH14	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
24	AM-BH14	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			

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RECEIVED BY	CHRES	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Billed	
Suitable Containers		Frozen		Advised	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project No:	1538021	Order/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Golder Associates

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

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	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
25	AM-BH15	0	0.25	soil	7/10/2016		bag		1	N		X	X						
26	AM-BH15	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
27	AM-BH15	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
28	AM-BH15	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
29	AM-BH15	1	1.25	soil	7/10/2016		bag		1	N		X	X						
30	AM-BH15	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
31	AM-BH15	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
32	AM-BH15	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X			X			
33	AM-BH15	2	2.25	soil	7/10/2016		bag		1	N		X	X						
34	AM-BH15	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
35	AM-BH15	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
36	AM-BH15	2.75	3	soil	7/10/2016		bag+jar		2	N		X	X						
37	AM-BH15	0	0.1	soil	7/10/2016		jar		1	N							X	X	X
38	QAQC005			soil	7/10/2016		jar		1	N				X.	X	X			
	QAQC006			soil	7/10/2016		jar		1	N		PLEASE SHIP TO EUROFINS							
39	QAQC007			soil	7/10/2016		jar		1	N	X								
40	QAQC008			soil	7/10/2016		jar		1	N	X								

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RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analyzing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled	Bill to:	
Suitable Containers		Frozen	Address	
Cool Box		Ambient		

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Sub/Order No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

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ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
41	AM-BH16	0	0.25	soil	7/10/2016		bag		1	N		X	X						
42	AM-BH16	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
43	AM-BH16	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
44	AM-BH16	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
45	AM-BH16	1	1.25	soil	7/10/2016		bag		1	N		X	X						
46	AM-BH16	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
47	AM-BH16	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
48	AM-BH16	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X						
49	AM-BH16	2	2.25	soil	7/10/2016		bag		1	N		X	X						
50	AM-BH16	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
51	AM-BH16	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
52	AM-BH16	2.75	3	soil	7/10/2016		bag+jar		2	N		X'	X			X			
53	AM-BH16	0	0.1	soil	7/10/2016		jar		1	N							X	X	X
54	QAQC001			soil	7/10/2016		jar		2	N				X	X	X			
	QAQC002			soil	7/10/2016		jar		2	N	PLEASE SHIP TO EUROFINS								
55	QAQC003			soil	7/10/2016		jar		1	N	X								
56	QAQC004			soil	7/10/2016		jar		1	N	X								

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

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	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal: Chilled
Suitable Containers: Frozen
Cool Box: Ambient

LAB BATCH NUMBER
Billed:
Address:

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE FREEZE OR BAKE ENTIRE SAMPLE

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Order/Quote No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
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	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters	EP075B - PAHs
54	AM-BH25	0	0.25	soil			bag		1	N		X	X				
55	AM-BH25	0.25	0.5	soil			bag+ 2 jars		3	N		X	X	X	X	X	
56	AM-BH25	0.5	0.75	soil			bag		1	N		X	X				
60	AM-BH25	1.5	1.75	soil			bag		2	N		X	X				
61	AM-BH25	1.75	2	soil			bag+jar		1	N		X	X				
62	AM-BH25	2	2.25	soil			bag		1	N		X	X				
63	AM-BH25	2.25	2.5	soil			bag		1	N		X	X				
64	AM-BH25	2.5	2.75	soil			bag		2	N		X	X				
65	AM-BH25	2.75	3	soil			bag+jar		1	N		X	X			X	
66	AM-BH25	0.5	0.6	soil			jar		1	N							X

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Bilton	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Project ID:	1538021	Order Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
AM-BH30	0	0.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
AM-BH30	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			X
AM-BH30	1	1.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			
AM-BH30	2	2.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.75	3	soil	10/10/2016		jar		1	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER		
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Bill to	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Golder Associates
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
79	AM-BH31	0	0.25	soil	10/10/2016		bag		1	N		X	X			
80	AM-BH31	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
81	AM-BH31	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
82	AM-BH31	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			
83	AM-BH31	1	1.25	soil	10/10/2016		bag		1	N		X	X			
84	AM-BH31	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
85	AM-BH31	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
86	AM-BH31	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			X
87	AM-BH31	2	2.25	soil	10/10/2016		bag		1	N		X	X			
88	AM-BH31	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
89	AM-BH31	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
90	AM-BH31	2.75	3	soil	10/10/2016		bag+jar		2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CURTIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled		Bill to	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1624749**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 5
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 14-Oct-2016 4:00 PM	Issue Date	: 18-Oct-2016
Client Requested Due Date	: 21-Oct-2016	Scheduled Reporting Date	: **21-Oct-2016**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 1.5, 1.2, 1.7°C
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 90 / 85

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **As only a soil jar suitable for PFAS testing was received for "AM-BH30 2.75-3" (ALS #78), pH Field and Fox (EA037) will not be tested on this sample.**
- **Samples "QAQC006" and "QAQC002" will be forwarded to Eurofins, as requested.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The estimated due date for this data is the 25/10/16.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Please be advised that a soil jar for PFAS testing was not received for "AM-BH14 1-1.25" (ALS #17), however one was received for "AM-BH14 0.75-1" (ALS #16). PFAS testing has been assigned to ALS #16, however if testing for this is not required on this sample, please contact ALS Client Services at ALSEnviro.Brisbane@alsglobal.com , ASAP.**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-001	[06-Oct-2016]	AM-BH13 0-0.25	✓						
EB1624749-002	[06-Oct-2016]	AM-BH13 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-003	[06-Oct-2016]	AM-BH13 0.5-0.75	✓						
EB1624749-004	[06-Oct-2016]	AM-BH13 0.75-1	✓						
EB1624749-005	[06-Oct-2016]	AM-BH13 1-1.25	✓						
EB1624749-006	[06-Oct-2016]	AM-BH13 1.25-1.5	✓						
EB1624749-007	[06-Oct-2016]	AM-BH13 1.5-1.75	✓						
EB1624749-008	[06-Oct-2016]	AM-BH13 1.75-2	✓						
EB1624749-009	[06-Oct-2016]	AM-BH13 2-2.25	✓						
EB1624749-010	[06-Oct-2016]	AM-BH13 2.25-2.5	✓						
EB1624749-011	[06-Oct-2016]	AM-BH13 2.5-2.75	✓						
EB1624749-012	[06-Oct-2016]	AM-BH13 2.75-3	✓	✓		✓			
EB1624749-013	[06-Oct-2016]	AM-BH14 0-0.25	✓						
EB1624749-014	[06-Oct-2016]	AM-BH14 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-015	[06-Oct-2016]	AM-BH14 0.5-0.75	✓						
EB1624749-016	[06-Oct-2016]	AM-BH14 0.75-1	✓	✓		✓			
EB1624749-017	[06-Oct-2016]	AM-BH14 1-1.25	✓						
EB1624749-018	[06-Oct-2016]	AM-BH14 1.25-1.5	✓						
EB1624749-019	[06-Oct-2016]	AM-BH14 1.5-1.75	✓						
EB1624749-020	[06-Oct-2016]	AM-BH14 1.75-2	✓						
EB1624749-021	[06-Oct-2016]	AM-BH14 2-2.25	✓						
EB1624749-022	[06-Oct-2016]	AM-BH14 2.25-2.5	✓						
EB1624749-023	[06-Oct-2016]	AM-BH14 2.5-2.75	✓						
EB1624749-024	[06-Oct-2016]	AM-BH14 2.75-3	✓						
EB1624749-025	[07-Oct-2016]	AM-BH15 0-0.25	✓						
EB1624749-026	[07-Oct-2016]	AM-BH15 0.25-0.5	✓	✓		✓	✓		✓
EB1624749-027	[07-Oct-2016]	AM-BH15 0.5-0.75	✓						
EB1624749-028	[07-Oct-2016]	AM-BH15 0.75-1	✓						
EB1624749-029	[07-Oct-2016]	AM-BH15 1-1.25	✓						
EB1624749-030	[07-Oct-2016]	AM-BH15 1.25-1.5	✓						
EB1624749-031	[07-Oct-2016]	AM-BH15 1.5-1.75	✓						
EB1624749-032	[07-Oct-2016]	AM-BH15 1.75-2	✓	✓		✓			
EB1624749-033	[07-Oct-2016]	AM-BH15 2-2.25	✓						
EB1624749-034	[07-Oct-2016]	AM-BH15 2.25-2.5	✓						
EB1624749-035	[07-Oct-2016]	AM-BH15 2.5-2.75	✓						

			SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-036	[07-Oct-2016]	AM-BH15 2.75-3	✓						
EB1624749-037	[07-Oct-2016]	AM-BH15 0-0.1		✓					
EB1624749-038	[07-Oct-2016]	QAQC005		✓		✓	✓		✓
EB1624749-041	[07-Oct-2016]	AM-BH16 0-0.25	✓						
EB1624749-042	[07-Oct-2016]	AM-BH16 0.25-0.5	✓	✓		✓	✓		✓
EB1624749-043	[07-Oct-2016]	AM-BH16 0.5-0.75	✓						
EB1624749-044	[07-Oct-2016]	AM-BH16 0.75-1	✓						
EB1624749-045	[07-Oct-2016]	AM-BH16 1-1.25	✓						
EB1624749-046	[07-Oct-2016]	AM-BH16 1.25-1.5	✓						
EB1624749-047	[07-Oct-2016]	AM-BH16 1.5-1.75	✓						
EB1624749-048	[07-Oct-2016]	AM-BH16 1.75-2	✓						
EB1624749-049	[07-Oct-2016]	AM-BH16 2-2.25	✓						
EB1624749-050	[07-Oct-2016]	AM-BH16 2.25-2.5	✓						
EB1624749-051	[07-Oct-2016]	AM-BH16 2.5-2.75	✓						
EB1624749-052	[07-Oct-2016]	AM-BH16 2.75-3	✓	✓		✓			
EB1624749-053	[07-Oct-2016]	AM-BH16 0-0.1		✓					
EB1624749-054	[07-Oct-2016]	QAQC001		✓		✓	✓		✓
EB1624749-057	[07-Oct-2016]	AM-BH25 0-0.25	✓						
EB1624749-058	[07-Oct-2016]	AM-BH25 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-059	[07-Oct-2016]	AM-BH25 0.5-0.75	✓						
EB1624749-060	[07-Oct-2016]	AM-BH25 1.5-1.75	✓						
EB1624749-061	[07-Oct-2016]	AM-BH25 1.75-2	✓						
EB1624749-062	[07-Oct-2016]	AM-BH25 2-2.25	✓						
EB1624749-063	[07-Oct-2016]	AM-BH25 2.25-2.5	✓						
EB1624749-064	[07-Oct-2016]	AM-BH25 2.5-2.75	✓						
EB1624749-065	[07-Oct-2016]	AM-BH25 2.75-3	✓	✓		✓			
EB1624749-066	[07-Oct-2016]	AM-BH25 0.5-0.6		✓					
EB1624749-067	[10-Oct-2016]	AM-BH30 0-0.25	✓						
EB1624749-068	[10-Oct-2016]	AM-BH30 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-069	[10-Oct-2016]	AM-BH30 0.5-0.75	✓						
EB1624749-070	[10-Oct-2016]	AM-BH30 0.75-1	✓	✓		✓			
EB1624749-071	[10-Oct-2016]	AM-BH30 1-1.25	✓						
EB1624749-072	[10-Oct-2016]	AM-BH30 1.25-1.5	✓						
EB1624749-073	[10-Oct-2016]	AM-BH30 1.5-1.75	✓						
EB1624749-074	[10-Oct-2016]	AM-BH30 1.75-2	✓						
EB1624749-075	[10-Oct-2016]	AM-BH30 2-2.25	✓						
EB1624749-076	[10-Oct-2016]	AM-BH30 2.25-2.5	✓						
EB1624749-077	[10-Oct-2016]	AM-BH30 2.5-2.75	✓						
EB1624749-079	[10-Oct-2016]	AM-BH31 0-0.25	✓						
EB1624749-080	[10-Oct-2016]	AM-BH31 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-081	[10-Oct-2016]	AM-BH31 0.5-0.75	✓						

			SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-082	[10-Oct-2016]	AM-BH31 0.75-1	✓						
EB1624749-083	[10-Oct-2016]	AM-BH31 1-1.25	✓						
EB1624749-084	[10-Oct-2016]	AM-BH31 1.25-1.5	✓						
EB1624749-085	[10-Oct-2016]	AM-BH31 1.5-1.75	✓						
EB1624749-086	[10-Oct-2016]	AM-BH31 1.75-2	✓	✓		✓			
EB1624749-087	[10-Oct-2016]	AM-BH31 2-2.25	✓						
EB1624749-088	[10-Oct-2016]	AM-BH31 2.25-2.5	✓						
EB1624749-089	[10-Oct-2016]	AM-BH31 2.5-2.75	✓						
EB1624749-090	[10-Oct-2016]	AM-BH31 2.75-3	✓						

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	(On Hold) SOIL No analysis requested	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG020T (solids) Total Metals by ICP-MS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-02 8 Metals (incl. Digestion)
EB1624749-037	[07-Oct-2016]	AM-BH15 0-0.1		✓	✓		✓
EB1624749-039	[07-Oct-2016]	QAQC007	✓				
EB1624749-040	[07-Oct-2016]	QAQC008	✓				
EB1624749-053	[07-Oct-2016]	AM-BH16 0-0.1		✓	✓		✓
EB1624749-055	[07-Oct-2016]	QAQC003	✓				
EB1624749-056	[07-Oct-2016]	QAQC004	✓				
EB1624749-066	[07-Oct-2016]	AM-BH25 0.5-0.6				✓	
EB1624749-078	[10-Oct-2016]	AM-BH30 2.75-3	✓				

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au

SERENA CURTI

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- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Serena Curti**

Report **521151-S**
Project name BRISBANE AIRPORT
Project ID 1538021
Received Date Oct 26, 2016

Client Sample ID			**QAQC006**	**QAQC002**
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**B16-Oc24499**	**B16-Oc24500**
Date Sampled			**Oct 07, 2016**	**Oct 14, 2016**
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50
BTEX				
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	68	67
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5

Client Sample ID			QAQC006	QAQC002
Sample Matrix			Soil	Soil
Eurofins | mgt Sample No.			B16-Oc24499	B16-Oc24500
Date Sampled			Oct 07, 2016	Oct 14, 2016
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	98	82
p-Terphenyl-d14 (surr.)	1	%	69	55
Organochlorine Pesticides				
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1
Dibutylchlorendate (surr.)	1	%	95	79
Tetrachloro-m-xylene (surr.)	1	%	79	68
Per- and Polyfluorinated Alkyl Substances (PFASs)				
Perfluorobutanesulfonic acid (PFBS)	0.005	mg/kg	< 0.005	-
Perfluorobutanoic acid (PFBA)	0.005	mg/kg	< 0.005	-
Perfluorohexanesulfonic acid (PFHxS)	0.005	mg/kg	< 0.005	-
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	< 0.005	-
Perfluorodecanesulfonic acid (PFDS)	0.005	mg/kg	< 0.005	-
Perfluoropentanoic acid (PFPeA)	0.005	mg/kg	< 0.005	-
Perfluorohexanoic acid (PFHxA)	0.005	mg/kg	< 0.005	-
Perfluoroheptanoic acid (PFHpA)	0.005	mg/kg	< 0.005	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-
Perfluorononanoic acid (PFNA)	0.005	mg/kg	< 0.005	-
Perfluorodecanoic acid (PFDA)	0.005	mg/kg	< 0.005	-
Perfluoroundecanoic acid (PFUnA)	0.005	mg/kg	< 0.005	-
Perfluorododecanoic acid (PFDoA)	0.005	mg/kg	< 0.005	-
Perfluorotridecanoic acid (PFTrDA)	0.005	mg/kg	< 0.005	-

Client Sample ID			QAQC006	QAQC002
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**B16-Oc24499**	**B16-Oc24500**
Date Sampled			**Oct 07, 2016**	**Oct 14, 2016**
Test/Reference	LOR	Unit		
Per- and Polyfluorinated Alkyl Substances (PFASs)				
Perfluorotetradecanoic acid (PFTeDA)	0.005	mg/kg	< 0.005	-
Perfluorooctanesulfonamide (PFOSA)	0.01	mg/kg	< 0.01	-
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.01	mg/kg	< 0.01	-
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.01	mg/kg	< 0.01	-
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	0.005	mg/kg	< 0.005	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	0.005	mg/kg	< 0.005	-
d5-n-EtFOSAA (surr.)	1	%	119	-
13C-PFHxA (surr.)	1	%	104	-
13C8-PFOS (surr.)	1	%	115	-
Heavy Metals				
Arsenic	2	mg/kg	17	20
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	49	53
Copper	5	mg/kg	26	19
Lead	5	mg/kg	13	12
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	45	30
Zinc	5	mg/kg	120	49
% Moisture	1	%	25	21

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Oct 27, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Melbourne	Oct 27, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 27, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 27, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Oct 27, 2016	14 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Metals M8	Melbourne	Oct 27, 2016	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Organochlorine Pesticides	Melbourne	Oct 27, 2016	14 Day
- Method: USEPA 8081 Organochlorine Pesticides			
Per- and Polyfluorinated Alkyl Substances (PFASs)	Brisbane	Oct 27, 2016	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			
% Moisture	Melbourne	Oct 26, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Oct 26, 2016 9:00 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	521151	**Due:**	Nov 2, 2016
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Krystle-Rae Biram
Project Name:	BRISBANE AIRPORT				
Project ID:	1538021				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Organochlorine Pesticides	Per- and Polyfluorinated Alkyl Substances (PFASs)	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794							X		
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	QAQC006	Oct 07, 2016		Soil	B16-Oc24499	X	X	X	X
2	QAQC002	Oct 14, 2016		Soil	B16-Oc24500	X		X	X
Test Counts						2	1	2	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	mg/kg	< 0.005			0.005	Pass	
Perfluorobutanoic acid (PFBA)	mg/kg	< 0.005			0.005	Pass	
Perfluorohexanesulfonic acid (PFHxS)	mg/kg	< 0.005			0.005	Pass	
Perfluorooctanesulfonic acid (PFOS)	mg/kg	< 0.005			0.005	Pass	
Perfluorodecanesulfonic acid (PFDS)	mg/kg	< 0.005			0.005	Pass	
Perfluoropentanoic acid (PFPeA)	mg/kg	< 0.005			0.005	Pass	
Perfluorohexanoic acid (PFHxA)	mg/kg	< 0.005			0.005	Pass	
Perfluoroheptanoic acid (PFHpA)	mg/kg	< 0.005			0.005	Pass	
Perfluorooctanoic acid (PFOA)	mg/kg	< 0.005			0.005	Pass	
Perfluorononanoic acid (PFNA)	mg/kg	< 0.005			0.005	Pass	
Perfluorodecanoic acid (PFDA)	mg/kg	< 0.005			0.005	Pass	
Perfluoroundecanoic acid (PFUnA)	mg/kg	< 0.005			0.005	Pass	
Perfluorododecanoic acid (PFDoA)	mg/kg	< 0.005			0.005	Pass	
Perfluorotridecanoic acid (PFTrDA)	mg/kg	< 0.005			0.005	Pass	
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	< 0.005			0.005	Pass	
Perfluorooctanesulfonamide (PFOSA)	mg/kg	< 0.01			0.01	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/kg	< 0.01			0.01	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	mg/kg	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	mg/kg	< 0.005			0.005	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/kg	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	mg/kg	< 0.005			0.005	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	99			70-130	Pass	
TRH C10-C14	%	118			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	105			70-130	Pass	
Toluene	%	109			70-130	Pass	
Ethylbenzene	%	107			70-130	Pass	
m&p-Xylenes	%	105			70-130	Pass	
Xylenes - Total	%	104			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	123			70-130	Pass	
TRH C6-C10	%	95			70-130	Pass	
TRH >C10-C16	%	124			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	81			70-130	Pass	
Acenaphthylene	%	82			70-130	Pass	
Anthracene	%	90			70-130	Pass	
Benz(a)anthracene	%	90			70-130	Pass	
Benzo(a)pyrene	%	82			70-130	Pass	
Benzo(b&j)fluoranthene	%	70			70-130	Pass	
Benzo(g.h.i)perylene	%	83			70-130	Pass	
Benzo(k)fluoranthene	%	86			70-130	Pass	
Chrysene	%	94			70-130	Pass	
Dibenz(a.h)anthracene	%	102			70-130	Pass	
Fluoranthene	%	80			70-130	Pass	
Fluorene	%	80			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	89			70-130	Pass	
Naphthalene	%	82			70-130	Pass	
Phenanthrene	%	82			70-130	Pass	
Pyrene	%	79			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4.4'-DDD	%	129			70-130	Pass	
4.4'-DDE	%	109			70-130	Pass	
4.4'-DDT	%	95			70-130	Pass	
a-BHC	%	118			70-130	Pass	
Aldrin	%	112			70-130	Pass	
b-BHC	%	106			70-130	Pass	
d-BHC	%	122			70-130	Pass	
Dieldrin	%	119			70-130	Pass	
Endosulfan I	%	103			70-130	Pass	
Endosulfan II	%	104			70-130	Pass	
Endosulfan sulphate	%	105			70-130	Pass	
Endrin	%	102			70-130	Pass	
Endrin aldehyde	%	107			70-130	Pass	
Endrin ketone	%	127			70-130	Pass	
g-BHC (Lindane)	%	114			70-130	Pass	
Heptachlor	%	100			70-130	Pass	
Heptachlor epoxide	%	109			70-130	Pass	
Hexachlorobenzene	%	100			70-130	Pass	
Methoxychlor	%	73			70-130	Pass	
LCS - % Recovery							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	%	100			50-150	Pass	
Perfluorobutanoic acid (PFBA)	%	86			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	100			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	92			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	114			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	97			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	89			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	99			50-150	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorooctanoic acid (PFOA)			%	93			50-150	Pass	
Perfluorononanoic acid (PFNA)			%	118			50-150	Pass	
Perfluorodecanoic acid (PFDA)			%	118			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)			%	121			50-150	Pass	
Perfluorododecanoic acid (PFDoA)			%	103			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)			%	98			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)			%	105			50-150	Pass	
Perfluorooctanesulfonamide (PFOSA)			%	99			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			%	132			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			%	103			50-150	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)			%	105			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)			%	94			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)			%	123			50-150	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	108			80-120	Pass	
Cadmium			%	106			80-120	Pass	
Chromium			%	112			80-120	Pass	
Copper			%	112			80-120	Pass	
Lead			%	119			80-120	Pass	
Mercury			%	115			75-125	Pass	
Nickel			%	111			80-120	Pass	
Zinc			%	109			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M16-No01063	NCP	%	77			70-130	Pass	
TRH C10-C14	M16-Oc26395	NCP	%	120			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M16-No01063	NCP	%	88			70-130	Pass	
Toluene	M16-No01063	NCP	%	87			70-130	Pass	
Ethylbenzene	M16-No01063	NCP	%	86			70-130	Pass	
m&p-Xylenes	M16-No01063	NCP	%	86			70-130	Pass	
o-Xylene	M16-No01063	NCP	%	85			70-130	Pass	
Xylenes - Total	M16-No01063	NCP	%	85			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M16-No01063	NCP	%	117			70-130	Pass	
TRH C6-C10	M16-No01063	NCP	%	70			70-130	Pass	
TRH >C10-C16	M16-Oc26395	NCP	%	126			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M16-Oc22487	NCP	%	99			70-130	Pass	
Acenaphthylene	M16-Oc22487	NCP	%	100			70-130	Pass	
Anthracene	M16-Oc22487	NCP	%	111			70-130	Pass	
Benz(a)anthracene	M16-Oc22487	NCP	%	97			70-130	Pass	
Benzo(a)pyrene	M16-Oc22487	NCP	%	124			70-130	Pass	
Benzo(b&j)fluoranthene	M16-Oc22487	NCP	%	96			70-130	Pass	
Benzo(g.h.i)perylene	M16-Oc22487	NCP	%	110			70-130	Pass	
Benzo(k)fluoranthene	M16-Oc22487	NCP	%	110			70-130	Pass	
Chrysene	M16-Oc22487	NCP	%	101			70-130	Pass	
Dibenz(a.h)anthracene	M16-Oc22487	NCP	%	129			70-130	Pass	
Fluoranthene	M16-Oc22487	NCP	%	93			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fluorene	M16-Oc22487	NCP	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M16-Oc22487	NCP	%	120			70-130	Pass	
Naphthalene	M16-Oc22487	NCP	%	98			70-130	Pass	
Phenanthrene	M16-Oc22487	NCP	%	103			70-130	Pass	
Pyrene	M16-Oc22487	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	M16-Oc23089	NCP	%	116			70-130	Pass	
4.4'-DDE	M16-Oc23089	NCP	%	109			70-130	Pass	
4.4'-DDT	M16-Oc23089	NCP	%	91			70-130	Pass	
a-BHC	M16-Oc23089	NCP	%	129			70-130	Pass	
Aldrin	M16-Oc23089	NCP	%	123			70-130	Pass	
b-BHC	M16-Oc23089	NCP	%	107			70-130	Pass	
d-BHC	M16-Oc23089	NCP	%	121			70-130	Pass	
Dieldrin	M16-Oc23089	NCP	%	123			70-130	Pass	
Endosulfan I	M16-Oc23089	NCP	%	106			70-130	Pass	
Endosulfan II	M16-Oc23089	NCP	%	101			70-130	Pass	
Endosulfan sulphate	M16-Oc23089	NCP	%	100			70-130	Pass	
Endrin	M16-Oc23089	NCP	%	105			70-130	Pass	
Endrin aldehyde	M16-Oc23089	NCP	%	98			70-130	Pass	
Endrin ketone	M16-Oc23089	NCP	%	123			70-130	Pass	
g-BHC (Lindane)	M16-Oc23089	NCP	%	122			70-130	Pass	
Heptachlor	M16-Oc23089	NCP	%	111			70-130	Pass	
Heptachlor epoxide	M16-Oc23089	NCP	%	119			70-130	Pass	
Hexachlorobenzene	M16-Oc23089	NCP	%	108			70-130	Pass	
Methoxychlor	M16-Oc23089	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S16-Oc24506	NCP	%	100			50-150	Pass	
Perfluorobutanoic acid (PFBA)	S16-Oc24506	NCP	%	85			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S16-Oc24506	NCP	%	98			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S16-Oc24506	NCP	%	92			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S16-Oc24506	NCP	%	114			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S16-Oc24506	NCP	%	96			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S16-Oc24506	NCP	%	89			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S16-Oc24506	NCP	%	98			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S16-Oc24506	NCP	%	91			50-150	Pass	
Perfluorononanoic acid (PFNA)	S16-Oc24506	NCP	%	119			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S16-Oc24506	NCP	%	99			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	S16-Oc24506	NCP	%	132			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	S16-Oc24506	NCP	%	114			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S16-Oc24506	NCP	%	89			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S16-Oc24506	NCP	%	73			50-150	Pass	
Perfluorooctanesulfonamide (PFOSA)	S16-Oc24506	NCP	%	83			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	S16-Oc24506	NCP	%	124			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	S16-Oc24506	NCP	%	102			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	S16-Oc24506	NCP	%	92			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	S16-Oc24506	NCP	%	105			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	S16-Oc24506	NCP	%	119			50-150	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Oc24734	NCP	%	108			75-125	Pass	
Cadmium	M16-Oc24734	NCP	%	108			75-125	Pass	
Chromium	M16-Oc24734	NCP	%	103			75-125	Pass	
Copper	M16-Oc24734	NCP	%	106			75-125	Pass	
Lead	M16-Oc24734	NCP	%	105			75-125	Pass	
Mercury	M16-Oc23342	NCP	%	116			70-130	Pass	
Nickel	M16-Oc24734	NCP	%	107			75-125	Pass	
Zinc	M16-Oc24734	NCP	%	106			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-No01062	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M16-Oc26394	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M16-Oc26394	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M16-Oc26394	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-No01062	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M16-No01062	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M16-No01062	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M16-No01062	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M16-No01062	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M16-No01062	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-No01062	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M16-No01062	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	M16-Oc26394	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M16-Oc26394	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M16-Oc26394	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Oc24927	NCP	mg/kg	8.1	7.7	5.0	30%	Pass	
Acenaphthylene	M16-Oc24927	NCP	mg/kg	0.6	< 0.5	57	30%	Fail	Q15
Anthracene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Oc24927	NCP	mg/kg	0.6	< 0.5	30	30%	Pass	
Fluorene	M16-Oc24927	NCP	mg/kg	6.2	6.0	3.0	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Naphthalene	M16-Oc24927	NCP	mg/kg	15	14	8.0	30%	Pass	
Phenanthrene	M16-Oc24927	NCP	mg/kg	6.1	5.2	16	30%	Pass	
Pyrene	M16-Oc24927	NCP	mg/kg	1.0	1.0	2.0	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M16-Oc26538	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M16-Oc26538	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorobutanoic acid (PFBA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B16-Oc25773	NCP	mg/kg	0.008	0.008	3.0	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorododecanoic acid (PFDoA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorooctanesulfonamide (PFOSA)	B16-Oc25773	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	B16-Oc25773	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	B16-Oc25773	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	B16-Oc25773	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Oc24733	NCP	mg/kg	6.8	7.1	4.0	30%	Pass	
Cadmium	M16-Oc24733	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Oc24733	NCP	mg/kg	21	19	10	30%	Pass	
Copper	M16-Oc24733	NCP	mg/kg	18	19	2.0	30%	Pass	
Lead	M16-Oc24733	NCP	mg/kg	53	54	1.0	30%	Pass	
Mercury	M16-Oc24733	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Oc24733	NCP	mg/kg	7.1	5.8	21	30%	Pass	
Zinc	M16-Oc24733	NCP	mg/kg	190	160	17	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B16-Oc24496	NCP	%	27	24	12	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Ryan Gilbert	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Jonathon Angell	Senior Analyst-Organic (QLD)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet ___ of ___

Project ID:	1538021	**Quote/Order No.:**	**160715Q**
Site Location:	**Brisbane Airport**	**Lab Name:**	**EUROFINS**
Sampled By:	**Morgan Midgley**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD** ☐ **FAX** ☐ **DISK** ☐ **EMAIL** ☐ **BULLETIN BOARD** ☐		
Email Format:	**PDF** ☐ **Excel** ☐ **Other** ☐ **Email Addre** mmidgley@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:
Please CC results to scurti@golder.com.au

Samples from a declared Fire Ant Area: Y
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	PFAS EXTENDED	B7 TRH BTEXN PAH As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	OCPs
QAQC006			soil	7-14/10/2016		2 jars		2	N		X	X	X
QAQC002			soil	14/10/2016		1 jar		1	N			X	X

#520188

#520186.

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE = Core(CR)** **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes P = Natural Plastic, N = Nitric Acid Preserved, C = Sodium Hydroxide Preserved, J = Solvent Washed Acid Rinsed Jar, S = Solvent Washed Acid Rinsed Glass Bottle, VC = Hydrochloric Preserved Vial, VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Serena Curti	GOLDER	19/10/2016	11am
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref.
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER

Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

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3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Krystle-Rae Biram
Project name:	BRISBANE AIRPORT
Project ID:	1538021
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Oct 26, 2016 9:00 AM
Eurofins | mgt reference:	**521151**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Krystle-Rae Biram - KBiram@golder.com.au.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1625464**	Page	: 1 of 12
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016 15:15
Order number	: 1538021	Date Analysis Commenced	: 27-Oct-2016
C-O-C number	: ----	Issue Date	: 01-Nov-2016 22:12
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020-F (Dissolved Metals): LOR's have been raised for some samples due to matrix interference.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	----	----	----	----	----
Total Cations	----	0.01	meq/L	----	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	**0.008**	**0.005**	<0.002	**0.008**	**0.002**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	**0.005**	**0.003**	<0.002	**0.004**	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.007**	**0.012**	<0.002	**0.011**	<0.002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	**0.004**	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	**0.002**	<0.002	<0.002	**0.006**	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.022**	**0.020**	<0.002	**0.033**	**0.002**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	**0.007**	**0.012**	<0.002	**0.011**	<0.002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**92.4**	**109**	**91.0**	**82.7**	**90.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.65	6.26	6.43	6.06	6.99
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	35300	20400	9120	14800	51400
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	341	362	185	95	297
Total Alkalinity as CaCO3	----	1	mg/L	341	362	185	95	297
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	242	570	218	388	260
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2620	2660	1140	1760	2400
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	13300	6920	2750	4900	20700
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	436	348	192	242	407
Magnesium	7439-95-4	1	mg/L	1010	649	265	335	1220
Sodium	7440-23-5	1	mg/L	6800	3500	1420	2460	10700
Potassium	7440-09-7	1	mg/L	238	54	39	63	375
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.10	0.08	<0.01	<0.01	<0.05
Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.005	0.001	0.004	<0.005
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	<0.0001	<0.0001	<0.0005
Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Copper	7440-50-8	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Nickel	7440-02-0	0.001	mg/L	0.024	0.074	0.018	0.032	0.018
Lead	7439-92-1	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Zinc	7440-66-6	0.005	mg/L	0.118	0.194	0.076	0.118	0.134
Iron	7439-89-6	0.05	mg/L	12.2	87.6	7.58	87.6	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	436	258	105	177	640
Total Cations	----	0.01	meq/L	407	224	94.2	148	596

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	**3.53**	**6.93**	**5.45**	**8.77**	**3.57**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	**0.171**	**0.011**	**0.037**	**0.006**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	**0.084**	**0.006**	**0.029**	**0.008**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	**0.394**	**0.054**	**0.293**	**0.062**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	**0.002**	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	**0.011**	<0.002	**0.021**	**0.004**
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	**0.004**	<0.002	**0.005**	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	**0.019**	<0.002	**0.023**	**0.003**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	**0.005**	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	**0.003**	<0.002	**0.016**	**0.004**
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	**0.686**	**0.071**	**0.431**	**0.087**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	<0.002	**0.405**	**0.054**	**0.314**	**0.066**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**87.2**	**89.4**	**86.8**	**102**	**87.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.004**	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.032**	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.120**	<0.005	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	----	----	----	----	----
Total Cations	----	0.01	meq/L	----	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	**0.036**	<0.002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	**0.029**	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.291**	<0.002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	**0.023**	<0.002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	**0.005**	<0.002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	**0.022**	<0.002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	**0.005**	<0.002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	**0.011**	<0.002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.422**	<0.002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	**0.314**	<0.002	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**82.4**	**94.5**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1625464**	Page	: 1 of 9
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 27-Oct-2016
C-O-C number	: ----	Issue Date	: 01-Nov-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA005P: pH by PC Titrator (QC Lot: 632975)									
EB1625473-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.75	6.90	2.20	0% - 20%
EB1625444-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.56	7.53	0.398	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 632976)									
EB1625444-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	431	431	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 632978)									
EB1625444-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	46	48	4.58	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	46	48	4.58	0% - 20%
ED038A: Acidity (QC Lot: 634475)									
EB1625246-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	6	6	0.00	No Limit
EB1625464-009	AM-MW16	ED038: Acidity as CaCO3	----	1	mg/L	388	400	3.08	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 630949)									
EB1625413-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	5620	5460	2.91	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 630948)									
EB1625413-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	2410	2510	4.32	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 631832)									
EB1625502-003	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	494	493	0.253	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	51	51	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	254	250	1.60	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	191	190	0.00	0% - 20%
EB1625464-006	AM-MW31	ED093F: Calcium	7440-70-2	1	mg/L	436	448	2.77	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	1010	1040	3.01	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	6800	6940	2.00	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 631832) - continued									
EB1625464-006	AM-MW31	ED093F: Potassium	7440-09-7	1	mg/L	238	244	2.52	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 631833)									
EB1625502-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0006	0.0006	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.023	0.024	0.00	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	1.31	1.25	4.96	0% - 20%
EB1625464-006	AM-MW31	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.024	0.024	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.118	0.123	3.52	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.10	0.08	14.9	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	12.2	12.6	3.41	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 631834)									
EB1625507-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0001	0.0001	0.00	No Limit
EB1625464-006	AM-MW31	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	2.61	2.51	4.02	0% - 20%
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	1.64	1.57	4.06	0% - 20%
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	7.91	7.58	4.36	0% - 20%
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	0.042	0.041	3.36	0% - 20%
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.347	0.393	12.5	0% - 20%
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 633504) - continued									
EB1625464-003	BIP-MW07	EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	0.042	0.034	18.9	0% - 20%
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	0.422	0.418	0.952	0% - 20%
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	0.009	0.007	26.8	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	0.025	0.022	15.3	0% - 50%
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.002	0.00	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 633504) - continued									
EB1625449-001	Anonymous	EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 632975)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98	102
				----	7 pH Unit	101	98	102
EA010P: Conductivity by PC Titrator (QCLot: 632976)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	4000 µS/cm	95.7	91	107
				<1	12890 µS/cm	96.0	91	107
ED037P: Alkalinity by PC Titrator (QCLot: 632978)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	106	80	120
ED038A: Acidity (QCLot: 634475)								
ED038: Acidity as CaCO3	----	----	mg/L	----	100 mg/L	104	90	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 630949)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	96.2	85	118
				<1	100 mg/L	93.0	85	118
ED045G: Chloride by Discrete Analyser (QCLot: 630948)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	96.2	90	115
				<1	1000 mg/L	106	90	115
ED093F: Dissolved Major Cations (QCLot: 631832)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
ED093F: Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
ED093F: Sodium	7440-23-5	1	mg/L	<1	----	----	----	----
ED093F: Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 631833)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	89.7	79	118
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.8	88	116
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	88	108
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.0	87	113
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.2 mg/L	96.0	88	114
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.2	89	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.9	89	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.2 mg/L	97.6	87	113
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	85.5	82	114
EG035F: Dissolved Mercury by FIMS (QCLot: 631834)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.9	84	118
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504) - continued								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.05 µg/L	103	60	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.05 µg/L	99.4	60	130
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.05 µg/L	120	60	130
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.05 µg/L	121	60	130
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.05 µg/L	115	60	130
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	0.05 µg/L	91.2	60	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.05 µg/L	101	60	130
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.05 µg/L	90.2	60	130
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.05 µg/L	104	60	130
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.05 µg/L	104	60	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.05 µg/L	90.2	60	130
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.05 µg/L	96.0	60	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.05 µg/L	115	60	130
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.05 µg/L	84.8	60	130
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.05 µg/L	85.0	60	130
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.05 µg/L	78.6	60	130
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.125 µg/L	71.0	60	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 633504)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.05 µg/L	120	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.125 µg/L	106	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.125 µg/L	83.0	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	0.125 µg/L	90.8	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.125 µg/L	76.4	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.05 µg/L	86.6	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.05 µg/L	117	60	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 633504)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.05 µg/L	97.8	60	130
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.05 µg/L	110	60	130
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.05 µg/L	81.2	60	130
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.05 µg/L	78.2	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 630949)							
EB1625451-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	# Not Determined	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 630948)							
EB1625451-001	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	89.9	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 631833)							
EB1625464-007	AM-MW14	EG020A-F: Aluminium	7429-90-5	0.5 mg/L	117	70	130
		EG020A-F: Arsenic	7440-38-2	0.1 mg/L	110	70	130
		EG020A-F: Cadmium	7440-43-9	0.1 mg/L	101	70	130
		EG020A-F: Chromium	7440-47-3	0.1 mg/L	90.5	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	86.0	70	130
		EG020A-F: Lead	7439-92-1	0.1 mg/L	110	70	130
		EG020A-F: Nickel	7440-02-0	0.1 mg/L	88.5	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	99.6	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 631834)							
EB1625464-007	AM-MW14	EG035F: Mercury	7439-97-6	0.01 mg/L	71.3	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.05 µg/L	94.0	50	130
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.05 µg/L	# Not Determined	60	130
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.05 µg/L	90.8	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	55.9	50	130
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.05 µg/L	71.0	50	130
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.05 µg/L	64.4	61	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.05 µg/L	69.4	60	130
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.05 µg/L	79.8	50	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.05 µg/L	96.0	65	130
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.05 µg/L	72.8	50	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504) - continued							
EB1625449-002	Anonymous	EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.05 µg/L	67.0	50	130
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.05 µg/L	60.4	30	130
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.125 µg/L	47.4	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.05 µg/L	103	50	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.125 µg/L	83.4	50	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.125 µg/L	70.5	50	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.125 µg/L	63.7	36	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.125 µg/L	60.0	30	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.05 µg/L	62.8	50	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.05 µg/L	64.0	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05 µg/L	84.4	50	130
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05 µg/L	69.8	60	130
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05 µg/L	76.2	60	130
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05 µg/L	60.2	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1625464**	Page	: 1 of 8
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016
Site	: Brisbane Airport	Issue Date	: 01-Nov-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 12
Order number	: 1538021	No. of samples analysed	: 12

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EB1625451--001	Anonymous	**Sulfate as SO4 - Turbidimetric**	14808-79-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluoropentane sulfonic acid (PFPeS)**	2706-91-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EB1625449--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
AM-MW31, AM-MW15, AM-MW10	AM-MW14, AM-MW16,	----	----	----	27-Oct-2016	25-Oct-2016	**2**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	25-Oct-2016	×
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	08-Nov-2016	✓
ED038A: Acidity							
Clear Plastic Bottle - Natural (ED038) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**28-Oct-2016**	08-Nov-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Natural (EG020A-F) QAQC300	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	23-Apr-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10, QAQC100	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	23-Apr-2017	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F)								
QAQC300		**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)								
AM-MW31,	AM-MW14,	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
AM-MW15,	AM-MW16,							
AM-MW10,	QAQC100							
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction followed by and LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

CHAIN OF CUSTODY DOCUMENTATION - WATER

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS
Sampled By:	Morgan Midgley		
Turnaround (Days):	5 days	BY:	
Report Format:	Please provide data in ESDAT format		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton Qld 4064
Phone : (07) 3721 5400
Fax : (07) 3721 5401
Invoice to be sent to Accounts Aust: auaccountspayable@golder.com.au
Project Manager: K Biram
Contact Phone: 37215400
Email: scurti@golder.com.au

Comments/Special Instructions:

Copy results to: pscells@golder.com.au
scurti@golder.com.au

ANALYSIS REQUIRED

	SAMPLE ID	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	No.CONTAINERS	POSSIBLE HIGH CONCENTRATION	PFAS extended suite 28 - ultra trace levels	pH	Major Anions - Cl, So4, alkalinity	Electrical conductivity	Major Cations - Ca, Mg, K, Na	Acidity	W-2 8 metals	Dissolved Al + Fe
1	AM-BH08	Water	25-10-16	1206	Ice	2	N	X							
2	AM-BH19	Water	25-10-16	1054	Ice	2	N	X							
3	BIP-~~BAC~~-MW07	Water	25.10.16	12.32	Ice	2	N	X							
4	BIP-MW1	Water	25.10.16	13.33	Ice	2	N	X							
5	BIP-MW2	Water	25-10-16	13.15	Ice	2	N	X							
6	AM-~~CP11~~MW31	Water	25-10-16	1312	Ice	4	N	X	X	X	X	X	X	X	X
7	AM-MW14	Water	25-10-16	0940	Ice	4	N	X	X	X	X	X	X	X	X
8	AM-MW15	Water	25.10.16	10.32	Ice	4	N	X	X	X	X	X	X	X	X
9	AM-MW16	Water	25.10.16	9.07	Ice	4	N	X	X	X	X	X	X	X	X
10	AM-MW10	Water	25.10.16	11.27	Ice	4	N	X	X	X	X	X	X	X	X
11	QAQC100	Water	25.10.16	9.07	Ice	4	N	X						X	
12	QAQC300	Water	25.10.16	14.30	Ice	3	N	X						X	

HOLD ALL OTHER BOTTLES NOT SELECTED FOR ANALYSIS

Environmental Division
Brisbane
Work Order Reference
EB1625464

Telephone : +61-7-3243 7222

SAMPLE MATRIX =Water SAMPLE TYPE = Discrete(DC) POSSIBLE HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid Preserved Vial; BS = Sulphuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; O = Other

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	[signature]	GOLDER		
RECEIVED BY	[signature]	ALS	25/10/16	15:15
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref.
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		Chilled		LAB BATCH NUMBER	
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1625464**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 3
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 25-Oct-2016 3:15 PM	Issue Date	: 25-Oct-2016
Client Requested Due Date	: 01-Nov-2016	Scheduled Reporting Date	: **01-Nov-2016**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.4°C, 5.8°C - Ice present
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 12 / 12

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
QAQC300	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
QAQC300	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PC)	WATER - EA010P Conductivity (PC)	WATER - ED038 Default Acidity as CaCO3 only	WATER - EG020F Dissolved Metals by ICPMS	WATER - EP231X-LL PFAS - Full Suite Low Level (28 analytes)	WATER - NT-01 & 02 Ca, Mg, Na, K, Cl, SO4, Alkalinity	WATER - W-02 8 Metals
EB1625464-001	25-Oct-2016 12:06	AM-BH08					✓		
EB1625464-002	25-Oct-2016 10:54	AM-BH19					✓		
EB1625464-003	25-Oct-2016 12:32	BIP-MW07					✓		
EB1625464-004	25-Oct-2016 13:33	BIP-MW1					✓		
EB1625464-005	25-Oct-2016 14:15	BIP-MW2					✓		
EB1625464-006	25-Oct-2016 13:12	AM-MW31	✓	✓	✓	✓	✓	✓	✓
EB1625464-007	25-Oct-2016 09:40	AM-MW14	✓	✓	✓	✓	✓	✓	✓
EB1625464-008	25-Oct-2016 10:32	AM-MW15	✓	✓	✓	✓	✓	✓	✓
EB1625464-009	25-Oct-2016 09:07	AM-MW16	✓	✓	✓	✓	✓	✓	✓
EB1625464-010	25-Oct-2016 11:27	AM-MW10	✓	✓	✓	✓	✓	✓	✓
EB1625464-011	25-Oct-2016 09:07	QAQC100					✓		✓
EB1625464-012	25-Oct-2016 14:30	QAQC300					✓		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au
K BIRAM		
- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
PAUL SCELLS		
- *AU Certificate of Analysis - NATA (COA)	Email	pscells@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	pscells@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	pscells@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	pscells@golder.com.au
- Chain of Custody (CoC) (COC)	Email	pscells@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	pscells@golder.com.au
SERENA CURTI		
- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Serena Curti**

Report **521162-W**
Project name BRISBANE AIRPORT
Project ID 1538021
Received Date Oct 26, 2016

Client Sample ID			**QAQC200**
Sample Matrix			**Water**
Eurofins | mgt Sample No.			**B16-Oc24663**
Date Sampled			**Oct 25, 2016**
Test/Reference	LOR	Unit	
Per- and Polyfluorinated Alkyl Substances (PFASs)			
Perfluorobutanesulfonic acid (PFBS)	0.00001	mg/L	0.00002
Perfluorobutanoic acid (PFBA)	0.00005	mg/L	< 0.00005
Perfluorohexanesulfonic acid (PFHxS)	0.00001	mg/L	[N09]0.00012
Perfluorooctanesulfonic acid (PFOS)	0.00001	mg/L	[N09]0.00004
Perfluorodecanesulfonic acid (PFDS)	0.00001	mg/L	< 0.00001
Perfluoropentanoic acid (PFPeA)	0.00001	mg/L	< 0.00001
Perfluorohexanoic acid (PFHxA)	0.00001	mg/L	[N09]0.00005
Perfluoroheptanoic acid (PFHpA)	0.00001	mg/L	< 0.00001
Perfluorooctanoic acid (PFOA)	0.00001	mg/L	[N09]0.00002
Perfluorononanoic acid (PFNA)	0.00001	mg/L	< 0.00001
Perfluorodecanoic acid (PFDA)	0.00001	mg/L	< 0.00001
Perfluoroundecanoic acid (PFUnA)	0.00001	mg/L	< 0.00001
Perfluorododecanoic acid (PFDoA)	0.00001	mg/L	< 0.00001
Perfluorotridecanoic acid (PFTrDA)	0.00001	mg/L	< 0.00001
Perfluorotetradecanoic acid (PFTeDA)	0.00001	mg/L	< 0.00001
Perfluorooctanesulfonamide (PFOSA)	0.00005	mg/L	< 0.00005
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.00005	mg/L	< 0.00005
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00005	mg/L	< 0.00005
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	0.00001	mg/L	< 0.00001
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.00005	mg/L	< 0.00005
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	0.00001	mg/L	< 0.00001
d5-n-EtFOSAA (surr.)	1	%	26
13C-PFHxA (surr.)	1	%	69
13C8-PFOS (surr.)	1	%	49
Heavy Metals			
Arsenic	0.001	mg/L	0.005
Cadmium	0.0002	mg/L	0.0002
Chromium	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Lead	0.001	mg/L	< 0.001
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	0.031
Zinc	0.005	mg/L	0.12

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluorinated Alkyl Substances (PFASs)	Brisbane	Oct 26, 2016	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			
Metals M8	Melbourne	Oct 26, 2016	28 Days
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			

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16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Oct 26, 2016 9:00 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	521162	**Due:**	Nov 2, 2016
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Krystle-Rae Biram
Project Name:	BRISBANE AIRPORT				
Project ID:	1538021				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Metals M8	Per- and Polyfluorinated Alkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	QAQC200	Oct 25, 2016		Water	B16-Oc24663	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	mg/L	< 0.00001			0.00001	Pass	
Perfluorobutanoic acid (PFBA)	mg/L	< 0.00005			0.00005	Pass	
Perfluorohexanesulfonic acid (PFHxS)	mg/L	< 0.00001			0.00001	Pass	
Perfluorooctanesulfonic acid (PFOS)	mg/L	< 0.00001			0.00001	Pass	
Perfluorodecanesulfonic acid (PFDS)	mg/L	< 0.00001			0.00001	Pass	
Perfluoropentanoic acid (PFPeA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorohexanoic acid (PFHxA)	mg/L	< 0.00001			0.00001	Pass	
Perfluoroheptanoic acid (PFHpA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorooctanoic acid (PFOA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorononanoic acid (PFNA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorodecanoic acid (PFDA)	mg/L	< 0.00001			0.00001	Pass	
Perfluoroundecanoic acid (PFUnA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorododecanoic acid (PFDoA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorotridecanoic acid (PFTrDA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorotetradecanoic acid (PFTeDA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorooctanesulfonamide (PFOSA)	mg/L	< 0.00005			0.00005	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/L	< 0.00005			0.00005	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	mg/L	< 0.00005			0.00005	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	mg/L	< 0.00001			0.00001	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/L	< 0.00005			0.00005	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	mg/L	< 0.00001			0.00001	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	%	80			50-150	Pass	
Perfluorobutanoic acid (PFBA)	%	86			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	82			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	83			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	52			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	74			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	87			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	79			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	84			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	101			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	97			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	%	75			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	%	53			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	54			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	65			50-150	Pass	
Perfluorooctanesulfonamide (PFOSA)	%	70			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	%	58			50-150	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			%	61			50-150	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)			%	76			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)			%	89			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)			%	81			50-150	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	89			80-120	Pass	
Cadmium			%	90			80-120	Pass	
Chromium			%	87			80-120	Pass	
Copper			%	86			80-120	Pass	
Lead			%	85			80-120	Pass	
Mercury			%	86			75-125	Pass	
Nickel			%	89			80-120	Pass	
Zinc			%	91			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M16-Oc24616	NCP	%	81			50-150	Pass	
Perfluorobutanoic acid (PFBA)	M16-Oc24616	NCP	%	94			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M16-Oc24616	NCP	%	83			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M16-Oc24616	NCP	%	91			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M16-Oc24616	NCP	%	54			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M16-Oc24616	NCP	%	76			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M16-Oc24616	NCP	%	94			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M16-Oc24616	NCP	%	80			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M16-Oc24616	NCP	%	92			50-150	Pass	
Perfluorononanoic acid (PFNA)	M16-Oc24616	NCP	%	98			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M16-Oc24616	NCP	%	97			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	M16-Oc24616	NCP	%	86			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	M16-Oc24616	NCP	%	57			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M16-Oc24616	NCP	%	53			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M16-Oc24616	NCP	%	62			50-150	Pass	
Perfluorooctanesulfonamide (PFOSA)	M16-Oc24616	NCP	%	67			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	M16-Oc24616	NCP	%	64			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	M16-Oc24616	NCP	%	68			50-150	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	M16-Oc24616	NCP	%	62			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	M16-Oc24616	NCP	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	M16-Oc24616	NCP	%	76			50-150	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	B16-Oc24501	NCP	%	92			75-125	Pass	
Cadmium	B16-Oc24501	NCP	%	89			75-125	Pass	
Chromium	B16-Oc24501	NCP	%	87			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	B16-Oc24501	NCP	%	83			75-125	Pass	
Lead	B16-Oc24501	NCP	%	82			75-125	Pass	
Mercury	B16-Oc24501	NCP	%	86			70-130	Pass	
Nickel	B16-Oc24501	NCP	%	88			75-125	Pass	
Zinc	B16-Oc24501	NCP	%	87			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M16-Oc24593	NCP	mg/L	0.00011	0.00012	6.0	30%	Pass	
Perfluorobutanoic acid (PFBA)	M16-Oc24615	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M16-Oc24593	NCP	mg/L	0.0017	0.0019	7.0	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M16-Oc24593	NCP	mg/L	0.030	0.031	2.0	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M16-Oc24593	NCP	mg/L	< 0.00002	< 0.00002	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorododecanoic acid (PFDoA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorooctanesulfonamide (PFOSA)	M16-Oc24615	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	M16-Oc24615	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	M16-Oc24615	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	M16-Oc24593	NCP	mg/L	< 0.00002	< 0.00002	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	M16-Oc24593	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	M16-Oc24593	NCP	mg/L	< 0.00002	< 0.00002	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	B16-Oc24501	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Cadmium	B16-Oc24501	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium	B16-Oc24501	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Copper	B16-Oc24501	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Lead	B16-Oc24501	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	B16-Oc24501	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Nickel	B16-Oc24501	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	B16-Oc24501	NCP	mg/L	0.013	0.010	21	30%	Pass	

Quality Control Analyte Summary Compliance

The table below is the actual occurrence of QC performed on the batch of samples within this report and as defined below

Analysis	Samples Analysed	Laboratory Duplicates Reported	Laboratory Matrix Spikes Reported	Method Blanks Reported	Laboratory Control Samples Reported
Per- and Polyfluorinated Alkyl Substances	1	1	1	1	1
Heavy Metals	1	1	1	1	1

Quality Control Parameter Frequency Compliance follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure April 2011, Schedule B3, Guideline on Laboratory Analysis of Potentially Contaminated Soils and US EPA SW-846 Chapter 1: 'Quality Control'.

It comprises the following when a laboratory process batch is deemed to consist of up to 20 samples that are similar in terms of matrix and test procedure, and are processed as one unit for QC purposes. If more than 20 samples are being processed, they are considered as more than one batch.

Method blank

One method blank per process batch.

Laboratory duplicate

There should be at least one duplicate per process batch, or two duplicates if the process batch exceeds 10 samples.

Laboratory control sample (LCS)

There should be at least one LCS per process batch.

Matrix spikes

There should be one matrix spike per matrix type per process batch.

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.

Authorised By

Ryan Gilbert	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Jonathon Angell	Senior Analyst-Organic (QLD)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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CHAIN OF CUSTODY DOCUMENTATION - WATER

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	Eurofins
Sampled By:	Morgan Midgley		
Turnaround (Days)	5 days	BY:	
Report Format:	Please provide data in ESDAT format		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton Qld 4064
Phone: : (07) 3721 5400
Fax : (07) 3721 5401
Invoice to be sent to Accounts Aust: auaccountspayable@golder.com.au
Project Manager: K Biram
Contact Phone: 37215400
Email: MMidgley@golder.com.au

Comments/Special Instructions:

Copy results to: pscells@golder.com.au
scurti@golder.com.au

ANALYSIS REQUIRED

SAMPLE ID	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	PFAS extended suite 28 parameters	M8 8 Metals (As,Cd,Cr,Cu,Ni,Pb,Zn,Hg)
QAQC200 ✓	Water	25.10.16	9.07 am	Ice		4	U	X	X

SAMPLE MATRIX =Water SAMPLE TYPE = Discrete(DC) POSSIBLE HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid Preserved Vial; BS = Sulphuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; O = Other

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	[signature]	GOLDER	25.10.16	3.30pm
RECEIVED BY	[signature]	Eurofins	26/10/16	10:15am
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

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Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
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Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Krystle-Rae Biram
Project name:	BRISBANE AIRPORT
Project ID:	1538021
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Oct 26, 2016 9:00 AM
Eurofins | mgt reference:	**521162**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 4.3 degrees Celsius.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Sample containers for volatile analysis received with zero headspace.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Krystle-Rae Biram - KBiram@golder.com.au.

APPENDIX D

Data Validation

DATA VALIDATION SUMMARY SHEET

Project Name:	**BAC Auto-Mall Precinct**	**Project Number:**	**1538021**
Primary Laboratory:	**ALS**	**Workorder Number:**	**EB1538408, EB1538408, EB1538419 and EB16000085**
Secondary Laboratory:	**Eurofins**	**Workorder Number:**	**484067**
Date Sampled:		**Sample Medium:**	

Sample Information

Number of Primary Samples:	**Contam Investigation - 28 soil and 10 water**	**Number of Triplicate Samples:**	**2 soil**
Number of Duplicate Samples:	**2 soil and 1 water**	**Number of Other QAQC Samples:**	**0**

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?		
All requested analysis completed?		Workorder EB1538419 Q1 sampled 18/12/2015: Sample 'QC1' is listed on the COC twice though only one sample with this name was received. It is listed both as on hold and requiring PFOS/PFOA. This sample was placed on hold.
		Due to a Laboratory Error analysis on sample EB1538408-030 (AM-BH02-2.75-3.00) could not be conducted.
		Workorder: EB160085: Dissolved metals limit of reporting raised for some samples due to
Samples received intact and chilled?	Y	
Samples analysed within appropiate holding times?	Y	
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?	NA	
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
MB		No MB outliers occurred.

Trip Spike Information

Analyte	Spike Concentrations	Recovery Concentration	% Recovery	Comments
				No trip spike collected.

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
Organochlorine Pesticides	Workorder EB1538419 QC sample Hexachlorobenzene recovery greater than upper control limit.
	For all remaining samples no LCS outlier or frequency outliers occurred.

Matrix Spike (MS) Analyses

Analyte Group	Comments
Metals	Workorder EB1538419 anonymous sample for chroumium recovery less than lower data quality objective, due to sample hetrogeneity. Confirmed by visual inspection by ALS.
Metals	Workorder EB1538419 anonymous sample for zinc: MS recovery not determined, background level greater than or equal to 4x spike level.
	For all remaining samples no MS outlier or frequency outliers occurred.

Laboratory Duplicates (LD) Analyses

Analyte Group	Analyte(s)	Sample ID	Comments
Moisture			LD frequency analysis outlier.
			For all remaining samples no LD outlier or frequency outliers occurred.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
	AM-BH01 2.5 – 3.0	Q1 (soil)	All results are below LOR and a RPD could not be calculated.
	AM-BH28 2.5 – 3.0	QC1 (soil)	COC error resulted in QC1 (soil) was not analysed.
	AM-BH01	QC1(water)	All results are below LOR and a RPD could not be calculated.

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments
	AM-BH01 2.5 – 3.0	Q2 (soil)	All results are below LOR and a RPD could not be calculated.
	AM-BH28 2.5 – 3.0	QC-2 (soil)	All results are below LOR and a RPD could not be calculated.
	AM-BH01	Q2-water	All results are below LOR and a RPD could not be calculated.

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
		No outliers occurred for surrogate compound monitoring analyses

Overall Comments

Minor non-conformances detected in matrix spike (metals) and laboratory control spike (organochlorine pesticides) are not considered to limit the use of the laboratory results.

Due to a Laboratory Error analysis on sample EB1538408-030 (AM-BH02-2.75-3.00) could not be conducted. This is a acid sulphate soil sample and not limit the results of the contamination investigation.

Analysis of one soil field duplicate was not conducted as a result of a COC error. Whilst the analysis frequency of field duplicates was not meet, it is not of concern as all results are below the laboratory limit of reporting.

This batch has been validated and is considered suitable for environmnetal interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By:	**Emma Cornish**	**Checked By**	Paul Scells
Date:	**4/02/2015**	**Date:**	9/02/2016

Soil Duplicate Analysis RPDs

		Sample ID	AM-BH01 2.5 – 3.0	Q1 (soil)	Q2 (soil)			AM-BH28 2.5 – 3.0	QC1 (soil)	QC-2 (soil)		
		Sample Type	Primary	Field Duplicate	Field Triplicate			Primary	Field Duplicate	Field Triplicate		
		Lab Reference	EB1538408	EB1538408	484067			EB1538419	EB1538419	484067		
		Date Sampled	16/12/2015	16/12/2015	16/12/2015			18/12/2015	18/12/2015	18/12/2015		
						RPDs					RPDs	
Analyte	**Units**	**LOR**				Primary vs Duplicate	Primary vs Triplicate				Primary vs Duplicate	Primary vs Triplicate
8:2 Fluorotelomer sulfonate	mg/kg	0.001	<0.001	<0.001	< 0.005	**ND**	**ND**	<0.001	-	< 0.005	-	**ND**
N-Et-FOSA	mg/kg	0.001	<0.001	<0.001	< 0.01	**ND**	**ND**	<0.001	-	< 0.01	-	**ND**
N-Et-FOSE	mg/kg	0.001	<0.001	<0.001	< 0.005	**ND**	**ND**	<0.001	-	< 0.005	-	**ND**
N-Me-FOSA	mg/kg	0.001	<0.001	<0.001	< 0.005	**ND**	**ND**	<0.001	-	< 0.005	-	**ND**
N-Me-FOSE	mg/kg	0.001	<0.001	<0.001	< 0.01	**ND**	**ND**	<0.001	-	< 0.01	-	**ND**
PFDcS	mg/kg	0.0002	<0.0002	<0.0002	< 0.005	**ND**	**ND**	<0.0002	-	< 0.005	-	**ND**
Perfluorobutanesulfonic acid (PFBS)	mg/kg	0.0002	<0.0002	<0.0002	< 0.005	**ND**	**ND**	<0.0002	-	< 0.005	-	**ND**
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	<0.0002	<0.0002	< 0.005	**ND**	**ND**	<0.0002	-	< 0.005	-	**ND**
Perfluorododecanoic acid (PFDoA)	mg/kg	0.0002	<0.0002	<0.0002	< 0.005	**ND**	**ND**	<0.0002	-	< 0.005	-	**ND**
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002	<0.0002	<0.0002	< 0.005	**ND**	**ND**	<0.0002	-	< 0.005	-	**ND**
Perfluorohexanesulfonic acid (PFHxS)	mg/kg	0.0002	<0.0002	<0.0002	< 0.005	**ND**	**ND**	<0.0002	-	< 0.005	-	**ND**
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002	<0.0002	<0.0002	< 0.005	**ND**	**ND**	<0.0002	-	< 0.005	-	**ND**
Perfluorononanoic acid (PFNA)	mg/kg	0.0002	<0.0002	<0.0002	< 0.005	**ND**	**ND**	<0.0002	-	< 0.005	-	**ND**
Perfluorooctanesulfonamide (PFOSA)	mg/kg	0.0002	<0.0002	<0.0002	< 0.01	**ND**	**ND**	<0.0002	-	< 0.01	-	**ND**
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.001	<0.001	<0.001	< 0.005	**ND**	**ND**	<0.001	-	< 0.005	-	**ND**
Perfluorooctanesulfonic acid (PFOS)3	mg/kg	0.0005	<0.0005	<0.0005	< 0.005	**ND**	**ND**	<0.0005	-	< 0.005	-	**ND**
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002	<0.0002	<0.0002	< 0.005	**ND**	**ND**	<0.0002	-	< 0.005	-	**ND**
Perfluoroundecanoic acid (PFUnA)	mg/kg	0.0002	<0.0002	<0.0002	< 0.005	**ND**	**ND**	<0.0002	-	< 0.005	-	**ND**
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.005	<0.005	<0.005	< 0.01	**ND**	**ND**	<0.005	-	< 0.01	-	**ND**
Perfluorooctanoate	mg/kg	0.0005	<0.0005	<0.0005	< 0.005	**ND**	**ND**	<0.0005	-	< 0.005	-	**ND**

Legend

ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)

- = Not analysed/calculated

Acceptable RPDs:

RPD <= 30%

RPD > 30%, Analyis result < 10 times LOR

RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

Groundwater Duplicate Analysis RPDs

		Sample ID	AM-BH01	QC1(water)	Q2-water		
		Sample Type	Primary	Field Duplicate	Field Triplicate		
		Lab Reference	EB1600085	EB1600085	484700		
		Date Sampled	4/01/2016	4/01/2016	4/01/2016		
						RPDs	
Analyte	**Units**	**LOR**				Primary vs Duplicate	Primary vs Inter Duplicate
8:2 Fluorotelomer sulfonate	mg/L	0.00001	<0.00001	<0.00001	< 0.0004	**ND**	**ND**
N-Et-FOSA	mg/L	0.000005	<0.000005	<0.000005	< 0.002	**ND**	**ND**
N-Et-FOSE	mg/L	0.0001	<0.0001	<0.0001	< 0.0004	**ND**	**ND**
N-Me-FOSA	mg/L	0.00005	<0.00005	<0.00005	< 0.002	**ND**	**ND**
N-Me-FOSE	mg/L	0.0001	<0.0001	<0.0001	< 0.0004	**ND**	**ND**
PFDcS	mg/L	0.000005	<0.000005	<0.000005	< 0.0004	**ND**	**ND**
Perfluorobutanesulfonic acid (PFBS)	µg/L	0.002	<0.002	<0.002	< 0.0004	**ND**	**ND**
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.002	<0.002	< 0.0004	**ND**	**ND**
Perfluorododecanoic acid (PFDoA)	µg/L	0.005	<0.005	<0.005	< 0.0004	**ND**	**ND**
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.002	<0.002	< 0.0004	**ND**	**ND**
Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.002	<0.002	<0.002	< 0.0004	**ND**	**ND**
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	<0.002	<0.002	< 0.0004	**ND**	**ND**
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.002	<0.002	< 0.0004	**ND**	**ND**
Perfluorooctanesulfonamide (PFOSA)	µg/L	0.002	<0.002	<0.002	< 0.0004	**ND**	**ND**
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	< 0.0004	**ND**	**ND**
Perfluorooctanesulfonic acid (PFOS)3	µg/L	0.002	<0.002	<0.002	< 0.0004	**ND**	**ND**
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.005	<0.005	<0.005	< 0.0004	**ND**	**ND**
Perfluoroundecanoic acid (PFUnA)	µg/L	0.005	<0.005	<0.005	< 0.0004	**ND**	**ND**
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.01	<0.01	<0.01	< 0.002	**ND**	**ND**
Perfluorooctanoate	µg/L	0.002	<0.002	<0.002	< 0.0004	**ND**	**ND**

Legend

ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)

- = Not analysed/calculated

Acceptable RPDs:

RPD <= 30%

RPD > 30%, Analyis result < 10 times LOR

RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

DATA VALIDATION SUMMARY SHEET

Project Name:	**BAC Auto-Mall Precinct**	**Project Number:**	**1538021**
Primary Laboratory:	**ALS**	**Workorder Number:**	**EB1625464 (Water) and EB1624693 / EB1624749 (Soil)**
Secondary Laboratory:	**Eurofins**	**Workorder Number:**	**521162 (water) and 521151 (soil)**
Date Sampled:	**25/ October 2016 & 06-10 October 2016**	**Sample Medium:**	**Water and Soil**

Sample Information

Number of Primary Samples:	**10 (water) and 133 (soil)**	**Number of Triplicate Samples:**	**1 (water) & 2 (Soil)**
Number of Duplicate Samples:	**1 (water) and 2 (soil)**	**Number of Other QAQC Samples:**	**1 (rinsate)**

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	
All requested analysis completed?	Y	
Samples received intact and chilled?	Y	
Samples analysed within appropiate holding times?	N	Holding time exceeded for workorder EB1625464 water quality parmaters samples: AM-MW31, AM-MW14, AM-MW15, AM-MW16,AM-MW10
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?	NA	
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Rinsate		All results below LOR for workorder EB1625464 sample QAQC300
MB		No value outliers exist for workorder EB1625464, 521162, EB1624749 and EB1624693

Trip Spike Information

Analyte	Spike Concentrations	Recovery Concentration	% Recovery	Comments
				No trip spike collected.

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
Heavy Metals and Per- and Polyfluorinated Alkyl Substances (PFASs)	No outliers exist for workorder EB1625464, 521162 and EB1624693
Organochlorine Pesticides, Organophosphorus Pesticides, Polynuclear Aromatic Hydrocarbons	Outliers exist for workorder EB1624749 analyte Hexachlorobenzene (HCB), Pirimphos-ethyl, Carbophenothion, Anthracene, Fluoranthene, Chrysene failed QC

Matrix Spike (MS) Analyses

Analyte Group	Comments
Sulfate	Workorder EB1625464 anonymous sample for Sulfate: MS recovery not determined, background level greater than or equal to 4x spike level.
Perfluoroalkyl Sulfonic Acids	Workorder EB1625464 anonymous sample for Perfluorobutane sulfonic acid (PFBS), Perfluoropentane sulfonic acid (PFPeS), Perfluorohexane sulfonic acid (PFHxS) and Perfluorooctane 1763-23-1 sulfonic acid (PFOS): MS recovery not determined, background level greater than or equal to 4x spike level.
Perfluoroalkyl Carboxylic Acids	Workorder EB1625464 anonymous sample for Perfluorohexanoic acid (PFHxA): MS recovery not determined, background level greater than or equal to 4x spike level.
	For all remaining samples for workorder EB1625464 no MS outlier or frequency outliers occurred.
Total Metals & Organochlorine Pesticides	Workorder EB1624749 anonymous sample for arsenic, chromium and zinc: MS recovery not determined, background level greater than or equal to 4x spike level. Sample AM-BH14 0.25-0.5 analyte 4.4'DDT and sample anonymous, analyte mercury failed QC.
Heavy Metals and Per- and Polyfluorinated Alkyl Substances (PFASs)	No MS outlier or frequency outliers occurred for workorder 521162 and EB1624693

Laboratory Duplicates (LD) Analyses

Analyte Group	Analyte(s)	Sample ID	Comments
			For workorders EB1625464, EB1624749 and 521162 no LD outlier or frequency outliers occurred.
Total metals	Chromium	AM-BH26 0.25-0.5	For workorders EB1624693 LD outlier or frequency outliers occurred.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
Heavy Metals and Perfluorinated Compounds	AM-MW16	QAQC100	No RPD exceendances, where results are below LOR a RPD could not be calculated.
Heavy Metals and Perfluorinated Compounds	AM-BH16 0.25-0.5	QAQC001	No RPD exceendances, where results are below LOR a RPD could not be calculated.
Heavy Metals and Perfluorinated Compounds	AM-BH15 0.25-0.5	QAQC005	RPD exceeded for zinc.

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments
Perfluorinated Compounds	AM-MW16	QAQC200	RPD exceeded for Perfluorohexanesulfonic acid (PFHxS).
Heavy Metals	AM-BH16 0.25-0.5	QAQC002	No RPD exceendances, where results are below LOR a RPD could not be calculated.
	AM-BH15 0.25-0.5	QAQC006	No RPD exceendances, where results are below LOR a RPD could not be calculated.

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
		No outliers occurred for surrogate compound monitoring analyses

Overall Comments

Minor non-conformances detected in matrix spikes (MS), laboratory control spikes (LCS) and laboratory duplicates (LD) analyses are not considered to limit the use of the laboratory results.

RPD exceedances were calculated for analysis in triplicate (QAQC200) sample when compared with the primary sample (AM-MW16) and duplicate (QAQC002) sample when compared with the primary sample AM-BH16 0.25-0.5 .

This batch has been validated and is considered suitable for environmnetal interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By:	**Bianca Vanzati**	**Checked By**	**Serena Curti**
Date:	**14/11/2016**	**Date:**	**14/11/2016**

Field Duplicates (soil) RPDs

			SDG	EB1624693 - EB1624749	EB1624693 - EB1624749		EB1624693 - EB1624749	EB1624693 - EB1624749		EB1624693 - EB1624749	521162		EB1624693 - EB1624749	521162	
			Field ID	AM-BH15 0.25-0.5	QAQC005	**RPD**	AM-BH16 0.25-0.5	QAQC001	**RPD**	AM-BH15 0.25-0.5	QAQC006	**RPD**	AM-BH16 0.25-0.5	QAQC002	**RPD**
			Sampled Date	07-Oct-16	07-Oct-16		07-Oct-16	07-Oct-16		07-Oct-16	07-Oct-16		07-Oct-16	07-Oct-16	
Chem_Group	**ChemName**	**Units**	**EQL**												
PFAS	8:2 Fluorotelomer sulfonate	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.005	ND	<0.0005		
	N-Et-FOSA	mg/kg	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.01	ND	<0.0005		
	N-Et-FOSE	mg/kg	0.0005	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005			<0.0005		
	N-Me-FOSA	mg/kg	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.01	ND	<0.0005		
	N-Me-FOSE	mg/kg	0.0005	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005			<0.0005		
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001 : 0.005 (Interlab)	<0.001	<0.001	ND	<0.001	<0.001	ND	<0.001	<0.005	ND	<0.001		
	Perfluoro-n-pentanoic acid (PFPeA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	PFAS (Sum of total - Lab Reported)	mg/kg	0.0002	<0.0002	0.0004	67	<0.0002	0.0008	120	<0.0002			<0.0002		
	PFDcS	mg/kg	0.0002	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002			<0.0002		
	Sum of PFHxS and PFOS	mg/kg	0.0002	<0.0002	0.0004	67	<0.0002	0.0008	120	<0.0002			<0.0002		
	N-methyl-perfluorooctanesulfonamidoacetic acid	mg/kg	0.0002	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002			<0.0002		
	Perfluorobutanesulfonic acid (PFBS)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluorododecanoic acid (PFDoA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluorohexanesulfonic acid (PFHxS)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	0.0004	67	<0.0002	<0.005	ND	<0.0002		
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	N-ethyl-perfluorooctanesulfonamidoacetic acid	mg/kg	0.0002	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002			<0.0002		
	Perfluorooctanesulfonamide (PFOSA)	mg/kg	0.0002 : 0.01 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.01	ND	<0.0002		
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.005	ND	<0.0005		
	Perfluorooctanesulfonic acid (PFOS)3	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	0.0004	67	<0.0002	0.0004	67	<0.0002	<0.005	ND	<0.0002		
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluoroundecanoic acid (PFUnA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
Halogenated Benzenes	Hexachlorobenzene	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	ND
Heavy Metals	Arsenic	mg/kg	5 : 2 (Interlab)	14	13	7	<5	8	46	14	17	19	<5	20	120
	Cadmium	mg/kg	1 : 0.4 (Interlab)	<1	<1	ND	<1	<1	ND	<1	<0.4	ND	<1	<0.4	ND
	Chromium	mg/kg	2 : 5 (Interlab)	41	39	5	55	54	2	41	49	18	55	53	4
	Copper	mg/kg	5	22	31	34	20	30	40	22	26	17	20	19	5
	Lead	mg/kg	5	10	17	52	6	13	74	10	13	26	6	12	67
	Mercury	mg/kg	0.1	<0.1	<0.1	ND	<0.1	<0.1	ND	<0.1	<0.1	ND	<0.1	<0.1	ND
	Nickel	mg/kg	2 : 5 (Interlab)	39	59	41	18	33	59	39	45	14	18	30	50
	Zinc	mg/kg	5	**90**	**236**	**90**	33	42	24	90	120	29	33	49	39
MAH	Benzene	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2	<0.1	ND	<0.2	<0.1	ND
	Toluene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.1	ND	<0.5	<0.1	ND
	Ethylbenzene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.1	ND	<0.5	<0.1	ND
	Xylenes (m & p)	mg/kg	0.5 : 0.2 (Interlab)	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.2	ND	<0.5	<0.2	ND
	Xylene (o)	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.1	ND	<0.5	<0.1	ND
	Xylenes (Sum of total) (Lab Reported)	mg/kg	0.5 : 0.3 (Interlab)	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.3	ND	<0.5	<0.3	ND
	Total BTEX	mg/kg	0.2	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2			<0.2		
Organochlorine Pesticides	a-BHC	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Aldrin	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Aldrin & Dieldrin (Sum of total) (Lab Reported)	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
	b-BHC	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Chlordane (Sum of total)	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.1	0	<0.05	<0.1	ND
	cis-Chlordane	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
	trans-Chlordane	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
	d-BHC	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	DDD	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	DDE	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	DDT	mg/kg	0.2 : 0.05 (Interlab)	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2	<0.05	0	<0.2	<0.05	ND
	DDT+DDE+DDD (Sum of total) (Lab Reported)	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
	Dieldrin	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endosulfan	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
	Endosulfan I	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endosulfan II	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endosulfan sulphate	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endrin	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endrin aldehyde	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endrin ketone	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	g-BHC	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Heptachlor	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Heptachlor epoxide	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Methoxychlor	mg/kg	0.2 : 0.05 (Interlab)	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2	<0.05	0	<0.2	<0.05	ND
Other	6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.01	ND	<0.0005		
	Perfluorooctanoate (PFOA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
PAH	Acenaphthene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Anthracene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benzo(a)pyrene TEQ (lower bound)*	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benzo(a)pyrene TEQ (medium bound)*	mg/kg	0.5	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0	0.6	0.6	ND
	Benzo(a)pyrene TEQ (upper bound)*	mg/kg	0.5	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0
	Benzo(b)&(j)fluoranthene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Chrysene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Fluoranthene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Fluorene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Naphthalene	mg/kg	1 : 0.5 (Interlab)	<1	<1	ND	<1	<1	ND	<1	<0.5	ND	<1	<0.5	ND
	Naphthalene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Phenanthrene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Pyrene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	PAH (Sum of Common 16 PAHs - Lab Reported)	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Perfluorinated Compounds	10:2 Fluorotelomer sulfonic acid	mg/kg	0.0005	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005			<0.0005		
	4:2 Fluorotelomer sulfonic acid	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.005	ND	<0.0005		
	Perfluoroheptane sulfonic acid	mg/kg	0.0002	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002			<0.0002		
	Perfluoropentane sulfonic acid	mg/kg	0.0002	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002			<0.0002		
Pesticides-Others	Demeton-s-methyl	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
Total Petroleum Hydrocarbons	TRH C6 - C9 Fraction	mg/kg	10 : 20 (Interlab)	<10	<10	ND	<10	<10	ND	<10	<20	ND	<10	<20	ND
	TRH C10 - C14 Fraction	mg/kg	50 : 20 (Interlab)	<50	<50	ND	<50	<50	ND	<50	<20	ND	<50	<20	ND
	TRH C15 - C28 Fraction	mg/kg	100 : 50 (Interlab)	<100	<100	ND	<100	<100	ND	<100	<50	ND	<100	<50	ND
	TRH C29 - C36 Fraction	mg/kg	100 : 50 (Interlab)	<100	<100	ND	<100	<100	ND	<100	<50	ND	<100	<50	ND
	TRH+C10 - C36 (Sum of total) (Lab Reported)	mg/kg	50	<50	<50	ND	<50	<50	ND	<50	<50	ND	<50	<50	ND
	TRH+C10 - C40 (Sum of total) (Lab Reported)	mg/kg	50	<50	<50	ND	<50	<50	ND	<50			<50		
	TRH C6 - C10 Fraction F1	mg/kg	10 : 20 (Interlab)	<10	<10	ND	<10	<10	ND	<10	<20	ND	<10	<20	ND
	TRH C6 - C10 Fraction Less BTEX F1	mg/kg	10 : 20 (Interlab)	<10	<10	ND	<10	<10	ND	<10	<20	ND	<10	<20	ND
	TRH >C10 - C16 Fraction F2	mg/kg	50	<50	<50	ND	<50	<50	ND	<50	<50	ND	<50	<50	ND
	TRH >C10 - C12 Fraction Less Naphthalene F2	mg/kg	50	<50	<50	ND	<50	<50	ND	<50			<50		
	TRH >C16 - C34 Fraction F3	mg/kg	100	<100	<100	ND	<100	<100	ND	<100	<100	ND	<100	<100	ND
	TRH >C34 - C40 Fraction F4	mg/kg	100	<100	<100	ND	<100	<100	ND	<100	<100	ND	<100	<100	ND

Legend

ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)

- = Not analysed/calculated

Acceptable RPDs:

RPD <= 30%

RPD > 30%, Analyis result < 10 times LOR

RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

Field Duplicates (water) RPDs

			Lab Report Number	EB1625464	EB1625464		EB1625464	521162	
			Field ID	AM-MW16	QAQC100	**RPD**	AM-MW16	QAQC200	**RPD**
			Sampled Date	25/10/2016	25/10/2016		25/10/2016	25/10/2016	
Chem_Group	**ChemName**	**Units**	**EQL**						
PFAS	10:2 Fluorotelomer sulfonic acid	µg/L	0.005	<0.005	<0.005	0	<0.005		
	4:2 Fluorotelomer sulfonic acid	µg/L	0.005 : 0.01 (Interlab)	<0.005	<0.005	ND	<0.005	<0.01	ND
	8:2 Fluorotelomer sulfonate	µg/L	0.005 : 0.01 (Interlab)	<0.005	<0.005	ND	<0.005	<0.01	ND
	N-Et-FOSA	µg/L	0.005 : 0.05 (Interlab)	<0.005	<0.005	ND	<0.005	<0.05	ND
	N-Et-FOSE	µg/L	0.005	<0.005	<0.005	ND	<0.005		
	N-Me-FOSA	µg/L	0.005 : 0.05 (Interlab)	<0.005	<0.005	ND	<0.005	<0.05	ND
	N-Me-FOSE	µg/L	0.005	<0.005	<0.005	ND	<0.005		
	Perfluorobutanoic acid (PFBA)	µg/L	0.01 : 0.05 (Interlab)	<0.01	<0.01	ND	<0.01	<0.05	ND
	Perfluoroheptane sulfonic acid	µg/L	0.002	0.002	<0.002	0	0.002		
	Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.002 : 0.01 (Interlab)	0.005	0.005	0	0.005	<0.01	0
	Perfluoropentane sulfonic acid	µg/L	0.002	0.029	0.029	0	0.029		
	PFAS (Sum of total - Lab Reported)	µg/L	0.002	0.431	0.422	2	0.431		
	PFDcS	µg/L	0.002	<0.002	<0.002	ND	<0.002		
	Sum of PFHxS and PFOS	µg/L	0.002	0.314	0.314	0	0.314		
	N-methyl-perfluorooctanesulfonamidoacetic acid	µg/L	0.002	<0.002	<0.002	ND	<0.002		
	Perfluorobutanesulfonic acid (PFBS)	µg/L	0.002 : 0.01 (Interlab)	0.037	0.036	3	0.037	0.02	60
	Perfluorodecanoic acid (PFDA)	µg/L	0.002 : 0.01 (Interlab)	<0.002	<0.002	ND	<0.002	<0.01	ND
	Perfluorododecanoic acid (PFDoA)	µg/L	0.002 : 0.01 (Interlab)	<0.002	<0.002	ND	<0.002	<0.01	ND
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.002 : 0.01 (Interlab)	0.005	0.005	0	0.005	<0.01	0
	Perfluorooctanesulfonic acid (PFOS)3	µg/L	0.002 : 0.01 (Interlab)	0.021	0.023	9	0.021	0.04	62
	Perfluorooctanoate (PFOA)	µg/L	0.002 : 0.01 (Interlab)	0.016	0.011	37	0.016	0.02	22
	Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.002 : 0.01 (Interlab)	0.293	0.291	1	**0.293**	**0.12**	**84**
	Perfluorononanoic acid (PFNA)	µg/L	0.002 : 0.01 (Interlab)	<0.002	<0.002	ND	<0.002	<0.01	ND
	Perfluorohexanoic acid (PFHxA)	µg/L	0.002 : 0.01 (Interlab)	0.023	0.022	4	0.023	0.05	74
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.005 : 0.05 (Interlab)	<0.005	<0.005	ND	<0.005	<0.05	ND
	N-ethyl-perfluorooctanesulfonamidoacetic acid	µg/L	0.002	<0.002	<0.002	ND	<0.002		
	Perfluorooctanesulfonamide (PFOSA)	µg/L	0.002 : 0.05 (Interlab)	<0.002	<0.002	ND	<0.002	<0.05	ND
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005 : 0.01 (Interlab)	<0.005	<0.005	ND	<0.005	<0.01	ND
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002 : 0.01 (Interlab)	<0.002	<0.002	ND	<0.002	<0.01	ND
	Perfluoroundecanoic acid (PFUnA)	µg/L	0.002 : 0.01 (Interlab)	<0.002	<0.002	ND	<0.002	<0.01	ND
Heavy Metals	Arsenic (Filtered)	mg/l	0.001	0.004	0.004	0	0.004	0.005	0
	Cadmium (Filtered)	mg/l	0.0001	<0.0001	<0.0001	ND	<0.0001	0.0002	0
	Chromium (Filtered)	mg/l	0.001	<0.001	<0.001	ND	<0.001	<0.001	ND
	Copper (Filtered)	mg/l	0.001	<0.001	<0.001	ND	<0.001	<0.001	ND
	Lead (Filtered)	mg/l	0.001	<0.001	<0.001	ND	<0.001	<0.001	ND
	Mercury (Filtered)	mg/l	0.0001	<0.0001	<0.0001	ND	<0.0001	<0.0001	ND
	Nickel (Filtered)	mg/l	0.001	0.032	0.032	0	0.032	0.031	0
	Zinc (Filtered)	mg/l	0.005	0.118	0.12	2	0.118	0.12	2

Legend

ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)

- = Not analysed/calculated

Acceptable RPDs: RPD <= 30%

RPD > 30%, Analyis result < 10 times LOR

RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

Field Blanks (water): Rinsate

Lab Report Number	EB1625464
Field ID	QAQC300
Sampled Date	25-Oct-16
Sample Type	Rinsate

Chem Group	Chemical Name	Units	EQL	
Heavy Metals	Aluminium (Filtered)	mg/l	0.01	
	Arsenic (Filtered)	mg/l	0.001	<0.001
	Cadmium (Filtered)	mg/l	0.0001	<0.0001
	Chromium (Filtered)	mg/l	0.001	<0.001
	Copper (Filtered)	mg/L	0.001	<0.001
	Iron (Filtered)	mg/l	0.05	
	Lead (Filtered)	mg/L	0.001	<0.001
	Mercury (Filtered)	mg/l	0.0001	<0.0001
	Nickel (Filtered)	mg/l	0.001	<0.001
	Zinc (Filtered)	mg/l	0.005	<0.005
Perfluorinated Compounds	10:2 Fluorotelomer sulfonic acid	µg/L	0.005	<0.005
	4:2 Fluorotelomer sulfonic acid	µg/L	0.005	<0.005
	8:2 Fluorotelomer sulfonate	µg/L	0.005	<0.005
	N-Et-FOSA	µg/L	0.005	<0.005
	N-Et-FOSE	µg/L	0.005	<0.005
	N-Me-FOSA	µg/L	0.005	<0.005
	N-Me-FOSE	µg/L	0.005	<0.005
	Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.01
	Perfluoroheptane sulfonic acid	µg/L	0.002	<0.002
	Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.002	<0.002
	Perfluoropentane sulfonic acid	µg/L	0.002	<0.002
	PFAS (Sum of total - Lab Reported)	µg/L	0.002	<0.002
	PFDcS	µg/L	0.002	<0.002
	Sum of PFHxS and PFOS	µg/L	0.002	<0.002
	N-methyl-perfluorooctanesulfonamidoacetic acid	µg/L	0.002	<0.002
	Perfluorobutanesulfonic acid (PFBS)	µg/L	0.002	<0.002
	Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.002
	Perfluorododecanoic acid (PFDoA)	µg/L	0.002	<0.002
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.002
	Perfluorooctanesulfonic acid (PFOS)3	µg/L	0.002	<0.002
	Perfluorooctanoate (PFOA)	µg/L	0.002	<0.002
	Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.002	<0.002
	Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.002
	Perfluorohexanoic acid (PFHxA)	µg/L	0.002	<0.002
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.005	<0.005
	N-ethyl-perfluorooctanesulfonamidoacetic acid	µg/L	0.002	<0.002
	Perfluorooctanesulfonamide (PFOSA)	µg/L	0.002	<0.002
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.005
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.002
	Perfluoroundecanoic acid (PFUnA)	µg/L	0.002	<0.002

APPENDIX E

Important Information Relating to this Report

IMPORTANT INFORMATION RELATING TO THIS REPORT

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8 December 2016

CONTAMINATION ASSESSMENT

Auto Mall Precinct Stage 2

Submitted to:
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REPORT

Report Number. 1538021-011-R-Rev1

Distribution:

1 Electronic Copy

Golder Associates

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1.0 INTRODUCTION

Brisbane Airport Corporation Pty Ltd (BAC) commissioned Golder Associates Pty Ltd (Golder) to undertake a contamination assessment for Stage 2 of the Auto Mall Precinct project at the Brisbane Airport (see **Figure 1**). Golder has previously conducted a desktop study contamination and Acid Sulfate Soil (ASS) review of the Auto Mall Precinct for BAC (reference 1460490-002-R-Rev0, February 2015), as well as contamination and ASS investigations in the adjacent Stage 1 (reference 1538021-003-R-Rev0, August 2016 and 1538021-005-R-Rev0, February 2015). The purpose of the contamination assessment is to inform the detailed design of the proposed development for Stage 2.

Combined contamination, ASS and geotechnical investigations were completed in October 2016, based on the scope of work defined in our proposal (Golder document reference no. P1538021-003-P-Rev0 dated 9 February 2016).

This report presents the contamination assessment findings for Stage 2 of the Auto Mall Precinct ("site"). The assessment results from the geotechnical and ASS investigations for Stage 2, and a limited supplementary soil and groundwater monitoring event from 6 wells located in Stage 1 are provided in separate reports.

2.0 PROJECT DETAILS

An Auto Mall Precinct is proposed to be developed on an area between Moreton Drive, Nancy Bird Way and Airport Drive at the Brisbane Airport. Refer attached **Figure 1** for the location plan. The proposed development comprises a test track in the middle of the site, surrounded by development lots for future commercial use. Private roads are located around the perimeter of the site. An Energex substation and easement is present on the site.

At the time of writing, we understand that the site is to be developed in three stages as follows:

- Development Stage 1: Track, roads and selected development lots; lots north of the Energex easement between the track and Moreton Drive, and the Track and Nancy Bird Way.
- Development Stage 2: development lots south of the Energex easement.
- Development Stage 3: development lots north of the Energex easement between the track and Airport Drive.

Drainage channels will run along site perimeter, with invert levels as low as of RL 0.2 m AD in the western portion of the site. Site drainage channels will discharge into nearby surface water drains

The current staging plan is provided in **Appendix A**.

However, for consistency with previous works, <u>we refer to the portion of the site north of the Energex easement as Stage 1, and the portion to the south as Stage 2</u>. This report focusses on Stage 2 investigation results (hereinafter referred to as "the site").

3.0 SITE DESCRIPTION

The site currently has an average surface RL of about 2.4 m AD[1] and is heavily vegetated with casuarina forest and mangroves. Stage 2 of the development covers an area of approximately 500 m by 300 m.

Landers Pocket drain is the closet surface water body feature, located at least 100 m west of the project area. Surface water in Landers Pocket drain flows north-east and south-west before discharging into Kedron Brook Floodway Drain. The Kedron Brook Floodway Drain discharges into Kedron Brook. The ultimate receiving environment of surface water is Moreton Bay. Proposed surface water drains will discharge into Landers Pocket drain.

[1] Aerodrome Datum

4.0 BACKGROUND INFORMATION

Golder previously conducted a desktop assessment of ASS, groundwater and contamination for the site in 2014. The findings of this desktop assessment were reported in Golder report reference No. 1416490-002-R-Rev0.

Relevant contamination findings for Stage 2 from the desktop assessment are summarised below:

- Brisbane Airport Corporation (BAC) maintains a Contaminated Sites Register (CSR). CSR listed site 28 (black sands) is located at the southern end of the Auto Mall Precinct within the Stage 2 investigation area, on the boundary with the Stage 1 investigation area. Potential contaminants of concern associated with the black sands include heavy metals, minerals and radioactivity.
- All remaining CSR listed sites were located outside of the Auto Mall Precinct area and were considered to have a low potential to cause impact to the current development site.
- In addition to the CSR, the desktop study completed for the Auto Mall Precinct in 2015 identified a construction yard in the southern portion of Stage 2 investigation area in 2009, likely associated with the works for the construction of Moreton Drive. This potential contamination source includes the possible contaminants of concern of hydrocarbons, heavy metals and organochlorine pesticides.

It is understood that mineral sands may have been placed on site in the past. The mineral sands are likely to be sourced from the mining activities on North Stradbroke Island where rutile, zircon and ilmenite were mined (and still are). These minerals contain titanium and zirconium metals as well as associated naturally occurring radioactive materials (NORMs).

Per- and poly-fluoroalkyl substances (PFAS) are emerging contaminants of concern at airports and airfields. PFAS (including PFOS and PFOA) are associated with historical use in aqueous film forming foams (AFFF) used for firefighting. PFAS are persistent chemicals with high groundwater mobility. Known PFAS source areas at the Brisbane Airport include the fire rescue training facilities and fire stations but PFAS have been widely detected in groundwater across the airport. The nearest potential sources of PFAS comprise:

- Satellite Fire Station located about 3.9 km north of the site.
- Fire Rescue Training Area located about 4.8 km north of the site.
- Main Fire Station located about 2.3 km north east of the site.

Since the desktop study was completed, fuel storage facilities were also identified as potential PFAS sources, due to the storage of large volumes of firefighting liquids. The closest fuel facilities to the site include:

- JUHI facility along Hakea Street, located about 780 m north-east of the site
- Former JUHI facility along Lomandra Drive, located about 1.3 km south of the site.

Previous groundwater investigations for PFAS conducted on Stage 1 indicated PFAS are diffused at low levels.

As the use of PFOS and PFOA has been discontinued in AFFF, existing groundwater contamination from these source areas or incidental use elsewhere at the airport is not expected to increase over time.

No known or potential PFAS contaminating activities were identified occurring (presently or in the past) on or in the immediate vicinity of the site. However, PFAS has been widely encountered in groundwater across the airport and therefore the need for a Preliminary Investigation (under GEM-002) is considered to be triggered at this site.

Based on the desktop assessment the main contaminants of interest (COI) for the investigation site comprise the following:

- PFAS, including PFOS and PFOA, in soil and groundwater associated with historical use in AFFF used for firefighting elsewhere at the airport.
- Heavy metals, mineral and radioactivity associated with the CSR site 28
- Hydrocarbons, heavy metals and organochlorine pesticides in soil associated with the former constructions yard.

5.0 REGULATORY FRAMEWORK

The following key regulatory drivers and guidance documents have been considered and utilised in conducting this assessment:

5.1 General

- Office of Legislative Drafting Attorney-General's Department, *Airports (Environment Protection) Regulations 1997* (AEPR 1997 guidelines).
- *Queensland Water Quality Guidelines* 2009, as amended in 2013 (QWQG 2009), which provides an overarching framework for the management of waters (including groundwater) under the Environmental Protection Act 1994.
- Provisions for the assessment and management of contaminated land under the *Environmental Protection Act 1994*
- ASC *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended in 2013 (NEPM 2013). The NEPM has been recognised as the primary national guidance document for the assessment of site contamination in Australia.

5.2 Per- and Poly-fluoroalkyl Substances (PFAS)

- Australian Government Department of Infrastructure and Regional Development *Guideline for Environmental Management – PFC Management Actions Advice* (GEM-002), Version June 2015.
- *Managing PFC Contamination at Airports Interim Contamination Management Strategy and Decision Framework*, GHD, June 2015.
- *Model Operating Conditions – ERA 60 – Waste Disposal* Version 1.1, Qld EHP, 30 January 2015.
- Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, *enHealth Statement: Interim national guidance on human health reference values for per- and poly-fluoroalkyl substances for use in site investigations in Australia,* June 2016.

6.0 ASSESSMENT CRITERIA

6.1 PFAS

Current Australian guidelines, including AEPR 1997, do not include screening or acceptable levels for PFAS. GEM-002 indicates that until national standards for the management of PFAS contamination are agreed, the framework for PFAS management developed by consultancy firm GHD (2015) - *Managing PFC Contamination at Airports Interim Contamination Management Strategy and Decision Framework* - is available to airports and is intended to facilitate discussion on PFAS management at leased federal airports.

The following Interim Screening Levels (from GHD 2015) for PFAS in soil, groundwater and surface water have been adopted as Tier 1 values for the initial assessment of risk.

Table 1: Interim Screening Levels for PFAS

Exposure Scenario	PFOS	PFOA / 8:2FTS	6:2FTS	Comment
Soil				
Human health (direct contact – offsite/soil reuse)	6 mg/kg	16 mg/kg	60 mg/kg	These are residential screening levels that are protective of human health via direct contact (ingestion, dermal and dust inhalation). These levels are conservative for consideration of construction workers and general public in the airport (commercial/industrial) setting.
Human health (direct contact – onsite/construction workers)	90 mg/kg	240 mg/kg	900 mg/kg	These interim screening levels are suitable for commercial/industrial land use settings. They are protective of adult worker and the general public health via direct contact (ingestion, dermal and dust inhalation). These levels do not consider the potential for leaching to groundwater.
Ecological (terrestrial)	0.373 mg/kg	3.73 mg/kg	n/a	Screening level is a low reliability, predicted no effect concentration and should provide 95% protection of terrestrial species.
Groundwater				
Human health (drinking water only)	0.2 µg/L	0.4 µg/L	5.0 µg/L	Based on a drinking water endpoint protective of human health and do not include allowance for other exposures or effects that might arise from use or disposal of water after use.
Ecological	In most cases the assessment of ecological impact will relate to the discharge of groundwater to a nearby surface water body, and impact on the aquatic ecosystem of the surface water. In assessing risk to surface waters, consideration should be given to the flux of the chemical in groundwater and the resulting dilution that will occur in the surface water. This can then be compared to the surface water screening values.			
Surface Water				
Ecological (toxicity effects on aquatic organisms)	6.66 µg/L	2,900 µg/L	n/a	95% species protection
Human Health (consumption of fish)	0.00065 µg/L*	0.3µg/L	0.0065 µg/L	Based on consumption of fish and applies to the receiving water **after** dilution.

*It is noted that this concentration is factor of 3 times lower than the limit of reporting (LOR) available at commercial analytical laboratories in Australia, using Ultratrace® methods. The concentration is also below the reported treatment levels using current technology/methods for saline waters. On this basis, the level of dilution that may be achieved prior to discharge into waterways becomes the critical factor rather than comparison to this interim screening level.

Additionally, the Queensland government has published maximum PFAS soil concentrations for use as day cover at landfills *(Model Operating Conditions – ERA 60 – Waste Disposal* Version 1.1, Qld EHP, 30 January 2015). These have been adopted to assess, suitability of PFAS-impacted soil to be disposed of offsite.

Further guidance on acceptable PFAS levels was recently provided in *enHealth Statement: Interim national guidance on human health reference values for per- and poly-fluoroalkyl substances for use in site investigations in Australia,* prepared by the Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee in June 2016.

The enHealth guidelines were also adopted as Tier 1 values for the initial assessment of risk for drinking water and surface water (recreational) exposure pathways.

Exposure Scenario	PFOS / PFHxS	PFOA	Comment
Groundwater			
Human health (drinking water)	0.5 µg/L	5 µg/L	The interim drinking water guideline values are not intended to be a guide for drinking water utility providers across Australia, but rather for use to confirm the quality of drinking water supplies potentially affected by specific instances of site contamination.
Surface Water			
Human Health (recreational)	5 µg/L	50 µg/L	Ten times the drinking water levels

6.2 Other Parameters

Airports (Environmental Protection) Regulations 1997 (AEPR – 1997) apply for airports in Australia and to all BAC land. The site is not listed as an Area of Environmental Significance at Brisbane Airport, as such results were compared with:

- Soil: Acceptable Limits for general areas (Schedule 3, Table 1 of AEPR).
- Groundwater: Accepted limits for marine Water (Schedule 2, Table 1 of AEPR).

In addition, the following guidelines derived from the *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013* (No. 1) (NEPM, 2013) Schedule B1 were also referenced as a general environmental screening tool for soil and groundwater:

- Soil: Ecological Screening Levels (ESLs) for commercial/industrial land use (coarse soil) for petroleum hydrocarbon compounds.
- Soil and groundwater: Human health exposure via vapour intrusion from volatile hydrocarbon impacts in soil (Hydrocarbon Screening Levels – HSLs). HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation pathway. The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures. They apply to different soil types, and depths below surface to greater than 8 m. For the program of works, the analytical data has been initially screened against the most conservative investigation level arising from the sand soil category.
- Soil: Health investigation Levels (HILs) for commercial/industrial land use for non-hydrocarbons.
- Soil: Ecological investigation levels (EILs) for commercial/industrial land use for non-hydrocarbons.
- Groundwater: Groundwater Investigation Levels (GILs) for marine waters, as the marine environment is the ultimate ecological receptor for groundwater.

7.0 FIELDWORK

7.1 Soil Investigation

Details of the soil investigation methodology for the contamination assessment are summarised in **Table 2** below.

Table 2: Field Activities - Drilling and Soil Sampling

Activity	Details
Drilling	Soil sampling for contamination assessment was conducted between 6 and 10 October 2016. Locations targeting potentiating contaminating activities are as follows: ▪ Broad scale site coverage for residues associated with historical use of AFFF at the airport: AM-BH10, AM-BH13 to AM-BH16, AM-BH18, AM-BH24 to AM-BH26, AM-BH29 and AM-BH30. ▪ CSR Site 28 (black sands) was targeted by locations AM-BH20 to AM-BH23, completed as part of Stage 1 investigation. The boreholes were advanced to depths of 3 m using hollow flight augers mounted on a light tracked vehicle. Borehole locations are presented in **Figure 1**. Borehole drilling was carried out under the supervision of a geotechnical engineer from Golder. Soil descriptions for the lithology encountered during drilling are presented as borehole logs in **Appendix B**.
Borehole Survey	Upon completion of intrusive investigations, selected locations were surveyed by MPA Surveyors using differential GPS for easting, northing and RL. Remaining locations and levels were inferred from the survey plan provided by BAC (received 24 November 2015).
Soil Sampling	Soil samples for contamination assessment purposes were collected at 0.25 m, 0.5 m, 1 m, 2 m and 3 m bgl.
Decontamination Procedure	Samples were collected using disposable nitrile gloves and a decontaminated hand trowel. Non-dedicated soil sampling equipment was decontaminated using Decon 90 and rinsed with potable water between sampling events.
Soil Screening	Collected soil samples were screened in the field using a photo-ionisation detector (PID) for the potential presence of volatile compounds.
Samples Preservation and Handling	Collected soil samples were placed in laboratory supplied containers. Sample containers were placed with ice, in eskies whilst on-site and in transit to the laboratory. All primary samples were sent to Australian Laboratory Services (ALS) of Brisbane under Chain of Custody (CoC) procedures. Secondary samples being the triplicate were sent to Eurofins of Brisbane under COC procedures. Laboratory documents are presented in **Appendix C**.
QA/QC	A Quality Assurance/ Quality Control (QA/QC) program was implemented for the contamination investigation which included the collection of duplicates and triplicates at the rate of a pair every 20 samples. No rinsate samples were collected.
Soil Analysis	Selected soil samples were analysed for the potential contaminants of concern identified in the desktop review: ▪ PFAS, extended suite. ▪ Total recoverable hydrocarbons (TRH) (with silica gel clean up) ▪ Benzene, toluene, ethylbenzene and xylenes (BTEX) ▪ Polycyclic aromatic hydrocarbons (PAH)

Activity	Details
	▪ Arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc (Heavy Metals) ▪ Organochlorine pesticides (OCP) ▪ Titanium and zirconium in 3 shallow soil samples where suspected black sands were noted. Laboratory analytical reports are presented **Appendix C.**

7.2 Groundwater Investigation

Details of groundwater investigation methodology are summarised in **Table 3** below.

Table 3: Field Activities - Groundwater Well Installation and Sampling

Activity	Details
Monitoring Well Installation and Construction	Four boreholes (AM-BH10, AM-BH14, AM-BH15 and AM-BH16) were converted into new groundwater monitoring wells (renamed AM-MW10, AM-MW13, AM-MW14, AM-MW15 and AM-MW16). **Figure 1** presents the new monitoring well locations. New monitoring wells were constructed using 50 mm, Class 18 PVC threaded screen and casing. Construction details for monitoring wells are presented on borehole reports in **Appendix B**.
Well Development	Following installation the new wells were developed using dedicated disposable bailers.
Well Gauging	Standing water levels (SWLs) were measured on 25 October 2016 prior to purging and sampling using a calibrated water level meter. Groundwater gauging data are presented in Section 8.2 Table 4.
Well Purging	The wells were purged prior to sampling using a low flow pump (peristaltic). Groundwater quality parameters and visual observations were recorded during purging. Purging continued until stabilisation of parameters.
Groundwater Sampling	Groundwater samples were collected directly from the pump.
Sample Preservation and Handling	Collected water samples were placed in laboratory supplied containers. Samples were placed with ice, in eskies whilst on-site and in transit to the laboratory. All samples were sent to ALS of Brisbane under Chain of Custody (CoC) procedures. Secondary samples being the triplicate were sent to Eurofins of Brisbane under COC procedures. Laboratory documents are presented in **Appendix C**.
QA/QC Samples	A QA/QC program was implemented for the contamination investigation which included the collection of duplicates and triplicates at a rate of one set every 20 samples (or less). One rinsate sample was collected as part of this investigation.
Groundwater Analysis	The groundwater samples from all wells were analysed for PFAS, extended suite using ultra trace methods and heavy metals and mercury. Laboratory analytical reports are presented in **Appendix C**.

8.0 INVESTIGATION FINDINGS

8.1 Sub-surface Conditions

Detailed information of subsurface conditions encountered at the site are described in Report of Boreholes (**Appendix B**).

A summary of typical subsurface conditions encountered is as follows:

- **Topsoil** - Generally comprising loose silty sand and sandy clay, found at most locations to depths between 0.1 to 0.3 m bgl, overlying
- **Recent Alluvium (Holocene)** – Compressible, inter-bedded sandy clays and clayey sands (Upper Holocene) from approximately 0 to 3 m bgl (target depth).

Thicker layers of fill comprising gravelly material, with various percentages of fines, were encountered at several locations (AM-BH13, AM-BH14, AM-BH18, AM-BH24, AM-BH26), to a maximum depth of 1.65 m bgl.

The PID readings (<10 ppm at all locations) are considered to be indicative of background conditions.

Layers of material possibly associated with mineral sand deposition, known to have been historically present in the site surroundings, were noted at the following locations:

- AM-BH26 at 1.75-2.0 m (black mottling in clay)
- AM-BH25 at 0.5-0.6 m bgl (black fine to coarse sand in clay)
- AM-BH15 at 0.0-0.1 m bgl (dark brown silty sand)
- AM-BH16 at 0.0-0.1 m bgl (black sand in silty clay)
- AM-BH29 at 0.0-0.1 m bgl (dark brown silty sand).

Samples at these locations were tested for the presence of NORMS using a radioactivity meter[2], but no levels higher than background were reported[3]. Furthermore, a walkover was conducted at the site measuring radioactivity levels at ground level, and no levels higher than background were reported.

No odours or staining were noted that may indicate potential contamination.

8.2 Groundwater Levels and Quality

Groundwater level measurements were recorded during groundwater monitoring on 25 October 2016 in the new groundwater monitoring wells. **Table 4** summarises the groundwater measurements for the current investigation.

Based on the measured groundwater levels, the general flow direction beneath the site is interpreted to be towards the north-east.

Table 4: Summary of Groundwater Level Observations

Well ID	Depth to Groundwater (m bgl)	Groundwater RL (m AD)
AM-MW10	1.19	1.18
AM-MW14	2.57	1.51
AM-MW15	1.90	1.24
AM-MW16	1.55	0.87

Field measurements of groundwater quality parameters are summarised in **Table 5**.

Table 5: Summary of Groundwater Quality Parameters

[2] Model Thermo Scientific *RadEye*™ suitable for characterising characterizing alpha, beta, gamma and X-ray radiation.

[3] Natural background radiation levels aw ay from any potential source w ere measured at 0.09 to 0.12 μSv/h. None of the samples tested reported readings above 0.12 μSv/h.

Well ID	pH	Conductivity (mS/cm)	Redox (mV)	Dissolved Oxygen (%)	Temperature (C)
AM-MW10	6.33	45.605	100.0	1.70	20.9
AM-MW14	5.56	17.880	-40.2	1.15	21.9
AM-MW15	6.11	7.953	51.1	1.21	21.1
AM-MW16	5.71	13.241	50.8	1.73	22.4

Based on groundwater quality parameters the following is noted:

- pH levels indicate groundwater is slightly acidic at all locations
- conductivity indicates groundwater is brackish to saline at all locations
- redox potential indicates groundwater conditions are oxidising in MW10, MW15 and MW16, and reducing in MW14
- dissolved oxygen levels are generally low.

8.3 Quality Assurance and Quality Control

8.3.1.1 Field QA/QC

Sampling equipment utilised during the field investigation did not contain Teflon® to prevent false positive results for PFAS. Soil and groundwater samples analysed for PFAS were placed into laboratory-issued bottles specifically for the analysis of PFAS, and therefore free of any Teflon® liners.

Two soil duplicates and two triplicate soil samples were submitted for analysis, in compliance with the data objectives for the number of primary samples (26). One groundwater duplicate and one triplicate were analysed during the groundwater investigation, as well as one rinsate.

8.3.1.2 Data Validation

The validity of analytical data was assessed by critical review of the QA/QC sample results. This was performed in accordance with USEPA guidelines as presented in the document *National Functional Guidelines for Superfund Organic Methods Data Review*, June 2008 (USEPA, 2008).

Accuracy and precision measurements from the appropriate QA/QC check samples were compared to assess the quality of the analytical data. The primary objective of the data validation process was to ensure that the data reported are suitable to be used to achieve the investigation objectives.

On the basis of the outcome of the validation procedures employed, the overall quality of the analytical data is considered to be of an acceptable standard for interpretive use. The following are noted:

- All samples were received under the appropriate COC documentation by the primary laboratory in appropriately preserved containers. Holding time breaches were reported for pH in groundwater samples, due to the short holding time for pH. Field pH measurement was utilised instead of laboratory results. No other holding time breaches were reported.
- A review of internal QA/QC checks indicates general compliance for surrogates and method blanks. Non-conformances are reported in laboratory control spikes (OCPs and PAHs), matrix spikes (PFAS, heavy metals and OCPs) and laboratory duplicates (frequency outlier); however these are not considered to limit the use of the laboratory results.
- Soil duplicate and triplicate samples yielded acceptable repeatability for the analysed compounds, with the exception of zinc in sample AM-BH15 0.25-0.5 and duplicate QAQC500 which reported an RPD of 90%. This is likely due to the heterogeneity in the material and is considered a minor non-compliance. The highest result among primary, duplicate and triplicate was used in the assessment.

Groundwater duplicate and triplicate samples yielded acceptable repeatability for the analysed compounds, with the exception of PFHxS in sample AM-MW16 and triplicate QAQC200, which reported an RPD of 84%. The highest result among primary, duplicate and triplicate was used in the assessment.

A data validation sheet has been completed and presented in **Appendix D**. Based on the above, we consider the laboratory test results to be representative and valid for the purposes of the investigation.

8.4 Soil Analysis

Laboratory test results for soil samples analysed for PFAS are summarised in **Table 5**. **Table 6** is a summary of the soil sample results for heavy metals, TRH, BTEX, PAH and OCP.

The laboratory results on soil samples indicated:

- Concentrations of PFAS were below the laboratory reporting limit and the adopted initial screening guidelines for human health and ecological (terrestrial) assessment in the analysed samples, with the exceptions of the following:
  - AM-BH14 at 0.25-0.5 m bgl, where PFOS is reported at 0.0003 mg/kg
  - AM-BH25 at 0.25-0.5 m bgl, where PFOS is reported at 0.0020 mg/kg and PFHxS at 0.0005 mg/kg
  - QAQC001, duplicate sample of BH16 at 0.25-0.5, where PFOS is reported at 0.0004 mg/kg and PFHxS at 0.0004 mg/kg
  - QAQC005, duplicate sample of BH15 at 0.25-0.5 m bgl, where PFOS is reported at 0.0004 mg/kg
- With reference to heavy metals, no exceedances of the AEPR guidelines are noted in the samples for the compounds tested. With reference to NEPM guidelines, exceedances of the EILs[4] are noted:
  - for nickel in 2 samples (AM-BH24 at 0.25-0.5 m and AM-BH26 at 0.25-0.5 m) in the western portion of the site
  - for zinc in 2 samples (AM-BH10 at 0.25-0.5 m and AM-BH15 0.25-0.5, in duplicate QAQC005), in the western and eastern portions of the site respectively
  - however, the 95% upper confidence limit of the mean concentration (UCL) calculated for nickel and zinc for the 14 samples of shallow soils collected at the site is equal to 34.64 mg/kg and 62.36 mg/kg respectively, with the standard deviations at 23.07 mg/kg and 54.14 mg/kg respectively. No individual result exceeded 250% of the assessment guidelines, therefore no 'hot spots', as defined in the NEPM 2013, have been identified, and standard deviations are lower than 50% of the respective guidelines. Therefore, based on this statistical approach, the overall soil quality is considered to meet the EILs for heavy metals for the site. The 95% UCL calculations sheets are attached in **Appendix E**.
- Titanium and zirconium were tested in 3 shallow soil samples: the results indicate that titanium concentrations are generally elevated (>250 mg/kg) in shallow soils of AM-BH15, AM-BH16 and AM-BH29, while zirconium is reported at low levels at all the locations (<3 mg/kg). This suggests that residual amounts of either rutile or ilmenite (or both) may be present and mixed in with the surface soil.
- Concentrations of TRH, BTEX, PAH and OCP were below the respective LORs in the samples (with the exception of TRH F3 in AM-BH20 at 0.25-0.5 m, reported at 120 mg/kg). Compound concentrations in the samples were below the adopted guidelines for human health and environment assessment.

The results indicate low levels of widespread contamination by PFAS in shallow soil, in the western and eastern portions of Stage 2. As the reported levels are below the Interim Screening Levels for human health and ecological receptors, soil is considered suitable for re-use at other locations at the airport with the same contamination profile (low risk), as well as day cover at landfills licenced to accept PFAS containing soils.

[4] EILs have been calculated using conservative values for CEC, as no analysis for site specific parameters were completed, and a pH of 4, as per the most conservative result of ASS analysis for shallow soils.

Table 6: Soil Laboratory Results Summary for PFAS

						Location_Code	AM-BH10	AM-BH10	AM-BH13	AM-BH13	AM-BH14	AM-BH14	AM-BH15	AM-BH15	AM-BH16	AM-BH16	AM-BH18	AM-BH18	AM-BH24	AM-BH24
						Depth	0.25-0.5	1.75-2	0.25-0.5	2.75-3	0.25-0.5	0.75-1	0.25-0.5	1.75-2	0.25-0.5	2.75-3	0.25-0.5	1.75-2	0.25-0.5	2.75-3
						Sampled_Date_Time	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016	7/10/2016	7/10/2016	7/10/2016	7/10/2016	6/10/2016	6/10/2016	6/10/2016	6/10/2016
						Lab_Report_Number	EB1624693	EB1624693	EB1624749	EB1624749	EB1624749	EB1624749	EB1624749	EB1624749	EB1624749	EB1624749	EB1624693	EB1624693	EB1624693	EB1624693
Chem_Group	ChemName	unit	EQL	Interim Screening Levels - Human health - industrial (direct contact only)1	Interim Screening Levels - Ecological (terrestrial, commercial/ industrial 60% protection, low reliability) 1	Maximum total concentration level in soil used as cover material of a operating QLD landfill (mg/kg)2														
Perfluorinated Compounds	10:2 Fluorotelomer sulfonic acid	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	4:2 Fluorotelomer sulfonic acid	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	8:2 Fluorotelomer sulfonate	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-Et-FOSA	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-Et-FOSE	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-Me-FOSA	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-Me-FOSE	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Perfluoroheptane sulfonic acid	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluoro-n-pentanoic acid (PFPeA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluoropentane sulfonic acid	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	PFDcS	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	N-methyl-perfluorooctanesulfonamidoacetic acid	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorobutanesulfonic acid (PFBS)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorododecanoic acid (PFDoA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0002	**90**	**0.373**	**6**	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorooctanoate (PFOA)	mg/kg	0.0002	**240**	**3.73**	**16**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorohexanesulfonic acid (PFHxS)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005	**900**		**60**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-ethyl-perfluorooctanesulfonamidoacetic acid	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorooctanesulfonamide (PFOSA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluoroundecanoic acid (PFUnA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	PFAS (Sum of total - Lab Reported)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

All concentrations are expressed in mg/kg unless indicated otherwise
"<" Denotes below detection limit and is in grey font.
"-" Denotes analysis not requested for this sample
1. Airservices Australia, Managing PFC Contamination at Airports, Interim Contamination Management Strategy and Decision Framework, GHD, June 2015.
2. Model operating conditions, ERA 60 - Waste disposal Version 1, 2015, Department of Environment and Heritage Protection, Queensland Government.

Table 6 (continued): Soil Laboratory Results Summary for PFAS

						Location_Code	AM-BH18	AM-BH18	AM-BH24	AM-BH24	AM-BH25	AM-BH25	AM-BH26	AM-BH26	AM-BH29	AM-BH29
						Depth	0.25-0.5	1.75-2	0.25-0.5	2.75-3	0.25-0.5	2.75-3	0.25-0.5	2.75-3	0.25-0.5	1.75-2
						Sampled_Date_Time	6/10/2016	6/10/2016	6/10/2016	6/10/2016	7/10/2016	7/10/2016	6/10/2016	6/10/2016	7/10/2016	7/10/2016
						Lab_Report_Number	EB1624693	EB1624693	EB1624693	EB1624693	EB1624749	EB1624749	EB1624693	EB1624693	EB1624693	EB1624693
Chem_Group	**ChemName**	**unit**	**EQL**	Interim Screening Levels - Human health - industrial (direct contact only)1	Interim Screening Levels - Ecological (terrestrial, commercial/ industrial 60% protection, low reliability) 1	Maximum total concentration level in soil used as cover material of a operating QLD landfill (mg/kg)2										
Perfluorinated Compounds	10:2 Fluorotelomer sulfonic acid	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	4:2 Fluorotelomer sulfonic acid	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	8:2 Fluorotelomer sulfonate	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-Et-FOSA	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-Et-FOSE	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-Me-FOSA	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-Me-FOSE	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001				<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Perfluoroheptane sulfonic acid	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluoro-n-pentanoic acid (PFPeA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluoropentane sulfonic acid	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	PFDcS	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	N-methyl-perfluorooctanesulfonamidoacetic acid	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorobutanesulfonic acid (PFBS)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorododecanoic acid (PFDoA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.0002	**90**	**0.373**	**6**	<0.0002	<0.0002	<0.0002	<0.0002	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorooctanoate (PFOA)	mg/kg	0.0002	**240**	**3.73**	**16**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorohexanesulfonic acid (PFHxS)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005	**900**		**60**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	N-ethyl-perfluorooctanesulfonamidoacetic acid	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorooctanesulfonamide (PFOSA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	Perfluoroundecanoic acid (PFUnA)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
	PFAS (Sum of total - Lab Reported)	mg/kg	0.0002				<0.0002	<0.0002	<0.0002	<0.0002	0.0025	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

All concentrations are expressed in mg/kg unless indicated otherwise
"<" Denotes below detection limit and is in grey font.
"-" Denotes analysis not requested for this sample
1. Airservices Australia, Managing PFC Contamination at Airports, Interim Contamination Management Strategy and Decision Framework, GHD, June 2015.
2. Model operating conditions, ERA 60 - Waste disposal Version 1, 2015, Department of Environment and Heritage Protection, Queensland Government.

Table 7: Soil Laboratory Results Summary for Other Parameters

										Location_Code	AM-BH10	AM-BH13	AM-BH14	AM-BH15	AM-BH15	AM-BH16	AM-BH16	AM-BH18	AM-BH21 0.50-1.00	AM-BH22 1.00-1.50	AM-BH23 0.50-1.00	AM-BH24	AM-BH25	AM-BH26	AM-BH29	AM-BH29
										Depth	0.25-0.5	0.25-0.5	0.25-0.5	0.0-0.1	0.25-0.5	0.0-0.1	0.25-0.5	0.25-0.5	0.5-1.0	1.0-1.5	0.5-1.0	0.25-0.5	0.25-0.5	0.25-0.5	0.25-0.5	0.0-0.1
										Sampled_Date_Time	6/10/2016	6/10/2016	6/10/2016	7/10/2016	7/10/2016	7/10/2016	7/10/2016	6/10/2016	17/12/2015	17/12/2015	17/12/2015	6/10/2016	7/10/2016	6/10/2016	7/10/2016	7/10/2016
										Lab_Report_Number	EB1624693	EB1624749	EB1624749	EB1624749	EB1624749	EB1624749	EB1624749	EB1624693	EB1538419	EB1538419	EB1538419	EB1624693	EB1624749	EB1624693	EB1624693	EB1624693
				NEPM 2013 Commercial/Industrial D, Sand Soil HSL for Vapour Intrusion (1)		NEPM 2013 EILs- Commercial and industrial (1)	NEPM 2013 ESLs- Commercial and industrial, Coarse Soil (1)	NEPM 2013 HIL- Commercial/Industrial D Soil (1)	Airports (EP) Regulations [AL] - General Areas (2)	Maximum total concentration level in soil used as cover material of a operating QLD landfill (mg/kg)(3)																
Chem_Group	ChemName	output unit	EQL	0-1m	1-2m																					
Halogenated	Hexachlorobenzene	mg/kg	0.05					80			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
Heavy Metals	Arsenic	mg/kg	5			160		3000	500	200	33	7	8	8	14	11	<5	14	11	20	14	<5	10	<5	8	7
	Cadmium	mg/kg	1					900	100	40	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
	Chromium	mg/kg	2			310			60,000		49	9	21	46	41	37	55	65	54	58	30	214	54	211	51	42
	Copper	mg/kg	5			85		240000	5000	2000	31	23	24	34	22	25	20	15	12	19	8	80	41	70	19	17
	Lead	mg/kg	5			1800		1500	1500	600	60	14	13	10	10	17	6	10	7	42	13	<5	15	<5	9	9
	Mercury	mg/kg	0.1					730	75	30	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel	mg/kg	2			55		6000	3000	600	33	9	14	52	39	18	18	18	7	14	6	82	31	82	38	27
	Titanium	mg/kg	10								-	-	-	360	-	340	-	-	-	-	-	-	-	-	-	250
	Zinc	mg/kg	5			110		400000	35,000	14000	242	30	40	56	90	65	33	61	25	35	24	38	44	32	47	41
	Zirconium	mg/kg	0.5								-	-	-	1.4	-	3	-	-	-	-	-	-	-	-	-	1.8
MAH	Benzene	mg/kg	0.2	3	3		75				<0.2	<0.2	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-
	Toluene	mg/kg	0.5	NL	NL		135				<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Ethylbenzene	mg/kg	0.5	NL	NL		165				<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Xylenes (m & p)	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Xylene (o)	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Xylenes (Sum of total) (Lab Reported)	mg/kg	0.5	260	370		180				<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Total BTEX	mg/kg	0.2								<0.2	<0.2	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-
OCP	a-BHC	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Aldrin	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Aldrin & Dieldrin (Sum of total) (Lab Reported)	mg/kg	0.05					45			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-	-	-	<0.05	<0.05	<0.05	<0.05	-
	b-BHC	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Chlordane (Sum of total)	mg/kg	0.05					530			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-	-	-	<0.05	<0.05	<0.05	<0.05	-
	cis-Chlordane	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	trans-Chlordane	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	d-BHC	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	DDD	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	DDE	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	DDT	mg/kg	0.2			640					<0.2	<0.2	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-
	DDT+DDE+DDD (Sum of total) (Lab Reported)	mg/kg	0.05					3600			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-	-	-	<0.05	<0.05	<0.05	<0.05	-
	Dieldrin	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Endosulfan	mg/kg	0.05					2000			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-	-	-	<0.05	<0.05	<0.05	<0.05	-
	Endosulfan I	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Endosulfan II	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Endosulfan sulphate	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Endrin	mg/kg	0.05					100			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Endrin aldehyde	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Endrin ketone	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	g-BHC	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Heptachlor	mg/kg	0.05					50			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Heptachlor epoxide	mg/kg	0.05								<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
	Methoxychlor	mg/kg	0.2					2500			<0.2	<0.2	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-
PAH	Acenaphthene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Acenaphthylene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Anthracene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Benz(a)anthracene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Benzo(a)pyrene	mg/kg	0.5				1.4		5		<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Benzo(a)pyrene TEQ (lower bound)*	mg/kg	0.5					40			<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Benzo(a)pyrene TEQ (medium bound)*	mg/kg	0.5					40			0.6	0.6	0.6	-	0.6	-	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	-
	Benzo(a)pyrene TEQ (upper bound)*	mg/kg	0.5					40			1.2	1.2	1.2	-	1.2	-	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	-
	Benzo(b)&(j)fluoranthene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Benzo(g,h,i)perylene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Benzo(k)fluoranthene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Chrysene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Dibenz(a,h)anthracene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Fluoranthene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Fluorene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Naphthalene	mg/kg	0.5	NL	NL	370					<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Phenanthrene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	Pyrene	mg/kg	0.5								<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
	PAH (Sum of Common 16 PAHs - Lab Reported)	mg/kg	0.5					4000	100		<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Total Petroleum Hydrocarbons	TRH C10 - C14 SG Cleanup	mg/kg	25								<50	<50	<50	-	-	-	-	<50	<50	<50	<50	<50	<50	<50	<50	-
	TRH C15 - C28 SG Cleanup	mg/kg	50								<100	<100	<100	-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	-
	TRH C29 - C36 SG Cleanup	mg/kg	50								<100	<100	<100	-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	-
	TRH C10 - C36 (Sum, Lab Reported) SG Cleanup	mg/kg	25								<50	<50	<50	-	-	-	-	<50	<50	<50	<50	<50	<50	<50	<50	-
	TRH >C10 - C16 SG Cleanup F2	mg/kg	50								<50	<50	<50	-	-	-	-	<50	<50	<50	<50	<50	<50	<50	<50	-
	TRH >C10 - C16 SG Cleanup Less Naphthalene F2	mg/kg	50								<50	<50	<50	-	-	-	-	<50	<50	<50	<50	<50	<50	<50	<50	-
	TRH >C16 - C34 SG Cleanup F3	mg/kg	100								<100	<100	<100	-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	-
	TRH >C34 - C40 SG Cleanup F4	mg/kg	100								<100	<100	<100	-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	-
	TRH C10 - C40 (Sum, Lab Rptd) SG Cleanup	mg/kg	50								<50	<50	<50	-	-	-	-	<50	<50	<50	<50	<50	<50	<50	<50	-
	TRH C6 - C9 Fraction	mg/kg	10								<10	<10	<10	-	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	-
	TRH C10 - C14 Fraction	mg/kg	50								-	-	-	-	<50	-	<50	-	-	-	-	-	-	-	-	-
	TRH C15 - C28 Fraction	mg/kg	100								-	-	-	-	<100	-	<100	-	-	-	-	-	-	-	-	-
	TRH C29 - C36 Fraction	mg/kg	100								-	-	-	-	<100	-	<100	-	-	-	-	-	-	-	-	-
	TRH+C10 - C36 (Sum of total) (Lab Reported)	mg/kg	50								-	-	-	-	<50	-	<50	-	-	-	-	-	-	-	-	-
	TRH+C10 - C40 (Sum of total) (Lab Reported)	mg/kg	50								-	-	-	-	<50	-	<50	-	-	-	-	-	-	-	-	-
	TRH C6 - C10 Fraction F1	mg/kg	10								<10	<10	<10	-	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	-
	TRH C6 - C10 Fraction Less BTEX F1	mg/kg	10	250|260|310	360|370|480		215		800		<10	<10	<10	-	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	-
	TRH >C10 - C16 Fraction F2	mg/kg	50								-	-	-	-	<50	-	<50	-	-	-	-	-	-	-	-	-
	TRH >C10 - C12 Fraction Less Naphthalene F2	mg/kg	50				170		500		-	-	-	-	<50	-	<50	-	-	-	-	-	-	-	-	-
	TRH >C16 - C34 Fraction F3	mg/kg	100				1700		500		-	-	-	-	<100	-	<100	-	-	-	-	-	-	-	-	-
	TRH >C34 - C40 Fraction F4	mg/kg	100				3300				-	-	-	-	<100	-	<100	-	-	-	-	-	-	-	-	-

All concentrations are expressed in mg/kg unless indicated otherw ise
"<" Denotes below detection limit and is in grey font.
"-" Denotes analysis not requested for this sample
" * " Denotes guidelines are based on the most conservative values.
1. NEPM - National Environment Protection (Assessment of Site Contamination) Measure (1999), amended May 2013
2. Airports (Environmental Protection) Regulations 1997.
3.. Model operating conditions, ERA 60 - Waste disposal Version 1, 2015, Department of Environment and Heritage Protection, Queensland Government

8.5 Groundwater Analysis

Laboratory test results for the groundwater samples collected from wells in Stage 2 are summarised in **Table 8**, and indicated:

- PFAS are widespread in groundwater at Stage 2, with a minimum of 3 compounds present in any well.
- PFOS concentrations in the groundwater samples are below the interim screening levels for human health (drinking water) and aquatic ecosystems protection. PFOS concentrations were above the LOR, with the exception of AM-MW15. PFOS concentrations and the LOR exceed the interim screening level for human consumption of fish.
- PFOA concentrations in groundwater samples were below interim screening levels for human health (drinking water), aquatic ecosystem protection and human consumption of fish. PFOA concentrations were above the LOR, with the exception of AM-MW15.
- 6:2 FTS and 8:2 FTS concentrations in the groundwater samples are below LOR (0.005 µg/L), hence also below interim screening levels for human health (drinking water and consumption of fish) and ecological receptors (available for 8:2 FTS only).
- No PFAS compounds are measured at concentrations above the enHealth guidelines for human health (recreational scenario) and ecological ecosystems protection.
- With reference to heavy metals, exceedances of the AEPR Marine Waters guideline and NEPM 2013 Marine Waters GILs are noted in all wells for nickel and zinc.

These results indicate that contamination management will be required if impacted groundwater is encountered and/or extracted (i.e. for dewatering) during construction works. Refer to CSM and qualitative risk assessment in **Section 9** and **Section 10** respectively.

Table 8: Groundwater Laboratory Results Summary for PFAS

								Field_ID	AM-MW10	AM-MW14	AM-MW15	AM-MW16
								Sampled_Date	25/10/2016	25/10/2016	25/10/2016	25/10/2016
								Lab_Report_Number	EB1625464	EB1625464	EB1625464	EB1625464
				Interim Screening Levels - Groundwater- Human Health (drinking water only) (1)	Interim Screening Levels - Surface Water - Ecological (toxicity effects on aquatic organisms) (1)	**Interim Screening Levels - Surface Water - Human Health (consumption of fish) (1)**	*enHealth Guidelines - Groundwater - Human Health (drinking water) (2)*	enHealth Guidelines - Surface Water - Human Health (recreational) (2)				
			EQL									
Perfluorinated Compounds	8:2 Fluorotelomer sulfonate	ug/L	0.005	0.4	2,900	**0.3**			<0.005	<0.005	<0.005	<0.005
	N-Et-FOSA	µg/L	0.005						<0.005	<0.005	<0.005	<0.005
	N-Et-FOSE	µg/L	0.005						<0.005	<0.005	<0.005	<0.005
	N-Me-FOSA	µg/L	0.005						<0.005	<0.005	<0.005	<0.005
	N-Me-FOSE	µg/L	0.005						<0.005	<0.005	<0.005	<0.005
	Perfluorobutanoic acid (PFBA)	µg/L	0.01						<0.01	<0.01	<0.01	<0.01
	Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.002						<0.002	0.004	<0.002	0.005
	PFDcS	µg/L	0.002						<0.002	<0.002	<0.002	<0.002
	Perfluorobutanesulfonic acid (PFBS)	µg/L	0.002						0.006	0.171	0.011	0.037
	Perfluorodecanoic acid (PFDA)	µg/L	0.002						<0.002	<0.002	<0.002	<0.002
	Perfluorododecanoic acid (PFDoA)	µg/L	0.002						<0.002	<0.002	<0.002	<0.002
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.002						<0.002	<0.002	<0.002	0.005
	Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.002				*0.5*	**5**	0.062	0.394	0.054	0.293
	Perfluorohexanoic acid (PFHxA)	µg/L	0.002						0.003	0.019	<0.002	0.023
	Perfluorononanoic acid (PFNA)	µg/L	0.002						<0.002	<0.002	<0.002	<0.002
	N-ethyl-perfluorooctanesulfonamidoacetic acid (MeFOSA)	ug/L	0.002						<0.002	<0.002	<0.002	<0.002
	Perfluorooctanesulfonamide (PFOSA)	µg/L	0.002						<0.002	<0.002	<0.002	<0.002
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005						<0.005	<0.005	<0.005	<0.005
	Perfluorooctanesulfonic acid (PFOS)	µg/L	0.002	0.2	6.66	**0.00065**	*0.5*	**5**	**0.004**	**0.011**	<0.002	**0.021**
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002						<0.002	<0.002	<0.002	<0.002
	Perfluoroundecanoic acid (PFUnA)	µg/L	0.002						<0.002	<0.002	<0.002	<0.002
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.005	60	900				<0.005	<0.005	<0.005	<0.005
	Perfluorooctanoate (PFOA)	µg/L	0.002	0.4	2900	**0.3**	*5*	**50**	0.004	0.003	<0.002	0.016
	10:2 Fluorotelomer sulfonic acid	µg/L	0.005						<0.005	<0.005	<0.005	<0.005
	4:2 Fluorotelomer sulfonic acid	µg/L	0.005						<0.005	<0.005	<0.005	<0.005
	Perfluoroheptane sulfonic acid	µg/L	0.002						<0.002	<0.002	<0.002	0.002
	Perfluoropentane sulfonic acid	µg/L	0.002						0.008	0.084	0.006	0.029
	Sum of PFHxS and PFOS	mg/L	0.000002	0.2	6.66	**0.00065**	*0.5*	**5**	0.000066	0.000405	0.000054	0.000314
	PFAS (Sum of total - Lab Reported)	µg/L	0.000002						0.087	0.686	0.071	0.431

All concentrations are expressed in µg/L unless indicated otherw ise
"<" Denotes below detection limit
1. Airservices Australia, *Managing PFC Contamination at Airports, Interim Contamination Management Strategy and Decision Framework*, GHD, June 2015.
2. Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, *enHealth Statement: Interim national guidance on human health reference values for per- and poly-fluoroalkyl substances for use in site investigations in Australia,* June 2016

Table 9: Groundwater Laboratory Results Summary for Heavy Metals and Mercury

						Field_ID	AM-MW10	AM-MW14	AM-MW15	AM-MW16
						Sampled_Date_Time	25/10/2016	25/10/2016	25/10/2016	25/10/2016
						Lab_Report_Number	EB1625464	EB1625464	EB1625464	EB1625464
				NEPM 2013 GILs, Recreational (1)	*NEPM 2013 GILs, Marine Waters (1)*	AEPR 1997 - Marine Waters (2)				
			EQL							
Heavy Metals	Arsenic (Filtered)	ug/L	1	**100**		50	<5	<5	1	4
	Cadmium (Filtered)	ug/L	0.1	**20**	*0.7*	2	<0.5	<0.5	<0.1	<0.1
	Chromium (Filtered)	ug/L	1		*27*	50	<5	<5	<1	<1
	Copper (Filtered)	ug/L	1	**20,000**	*1.3*	5	<5	<5	<1	<1
	Lead (Filtered)	ug/L	1	**100**	*4.4*	5	<5	<5	<1	<1
	Mercury (Filtered)	ug/L	0.1	**10**	*0.1*	0.1	<0.1	<0.1	<0.1	<0.1
	Nickel (Filtered)	ug/L	1	**200**	*7*	15	*18*	*74*	*18*	*32*
	Zinc (Filtered)	ug/L	5		*15*	50	*134*	*194*	*76*	*118*

All concentrations are expressed in µg/L unless indicated otherw ise
"<" Denotes below detection limit
1. NEPM - National Environment Protection (Assessment of Site Contamination) Measure (1999), amended May 2013
2. Airports (Environmental Protection) Regulations 1997

9.0 CONCEPTUAL SITE MODEL

9.1 Developing the Conceptual Site Model (CSM)

In accordance with Schedule B2 of the NEPM 2013, a CSM has been developed for the site to assess identified contamination in relation to its current condition and planned disturbances of soil and groundwater. The essential elements of the CSM have been identified in the guidelines as the following:

- Known and potential sources of contamination and contaminants of concern including the mechanism(s) of contamination (i.e. nature of the source release into the environment).
- Potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air). This project focuses on groundwater and soil as the affected media.
- Potential and complete exposure pathways.
- Human and ecological receptors.

The above elements have been addressed in the following sections.

9.2 Contaminants of Interest

The results of the desktop assessment (Section 4) and the investigations (Section 8) identified the following contaminants of interest:

Soil	Groundwater
PFOS and/or PFHxS are present in soil, though not at concentrations exceeding any of the proposed guidelines. Nickel and zinc are reported in shallow soils in concentrations exceeding the EILs at locations in the western and eastern portions of the site; however, statistical assessment of the data indicated that the concentrations are suitable to remain on site under the current land use setting. Titanium is also present in soils along the eastern portion of the site.	PFOS detected concentrations (and the laboratory reporting limits for wells where it was not detected) exceed the interim screening level for human consumption of fish. Nickel and zinc exceed Marine Waters guidelines presented in the AEPR 1997 and NEPM 2013 (GILs) in all wells installed on site.

The low levels of PFAS, heavy metals and TRH detected in the soils at the Stage 2 investigation area of the Auto Mall precinct are not considered to represent contamination requiring management if disturbed.

The site soils are considered to be suitable for reuse at other locations at the airport, without restriction.

Low levels of PFAS inside soil may become mobilised in groundwater as a result of surcharging activities consolidating these materials below the water table. It is not expected that these impacts will be greater that the level of PFAS currently detected in groundwater.

However, the presence of heavy metals in shallow soil at concentrations exceeding NEPM 2013 ecological investigation levels will be further assessed.

PFAS and heavy metals contamination in groundwater is further considered in this CSM and Qualitative Risk Assessment.

9.3 Sources

Active or historical primary sources of PFAS were not identified at the Auto Mall Precinct site.

Low level and diffuse PFAS impacts were detected in the four groundwater investigation locations.

Heavy metals identified in soil and groundwater could potentially be associated with the historical use of the site as construction yard, but this in only inferred at this stage.

For dewatering activities at the site, the extracted groundwater represents a source of contamination that could be released to the environment if not managed properly.

9.4 Pathways for Exposure to PFAS Impacted Groundwater

The key contaminant transport pathways for impacted groundwater are:

- **Groundwater migration to surface water bodies**: localised groundwater flow beneath the site is expected to be in a westerly direction towards Landers Pocket drain, which discharges into the Kedron Brook Floodway Drain. Depending on the level of dilution and the resulting concentrations in the ultimate receiving water body, humans may be exposed to unacceptable concentrations of PFAS through the consumption of fish/aquatic species.
- **Surface water discharge of groundwater seepage entering excavations**: Currently planned construction activities include excavation of drainage channels to an invert level of RL 0.2 m AD across the site. Groundwater was recently measured at an average level of RL 1.2 m AD. It is expected that groundwater seepage will enter excavations for the drainage channels and be discharged to the existing surface drainage networks. Depending on the level of dilution and the resulting concentrations in the ultimate receiving water body, humans may be exposed to unacceptable concentrations of PFAS through the consumption of fish/aquatic species, and aquatic ecosystems to unacceptable concentrations of heavy metals.
- **Direct contact with soil**: Ecological receptors and humans (workers and airport visitors) can be exposed to the contamination if growing in, existing in or coming into contact with contaminated soil and groundwater. PFAS and metals do not readily enter humans via dermal contact, but may via ingestion. Ecological receptors are more susceptible as they are more likely to take up PFAS and metals while being immersed in the contaminated media.

9.5 Receptors

The key receptors for identified groundwater contamination at the investigation sites comprise:

- **General public**: Persons who may consume fish or other aquatic species from surface water bodies into which groundwater has been discharged (either directly through dewatering discharge or indirectly as a groundwater discharge into the receiving environment), and may access the surface water bodies for recreational use. Adjacent surface water bodies comprise:
  - An artificial surface drain will be formed on the Auto Mall Precinct site. This will connect to an existing artificial surface drain about 100 m west of the site. This drain is semi tidal and discharges into a tidal drain (the Kedron Brook Floodway Drain about 1.5 km south west of this site) and then into Kedron Brook, which ultimately drains into Moreton Bay.
- **Aquatic ecosystems**: As heavy metals are reported in concentrations exceeding guidelines for the protection of the marine waters, aquatic ecosystems are considered as potential receptors in surface water bodies into which groundwater has been discharged (either directly through dewatering discharge or indirectly as a groundwater discharge into the receiving environment). Titanium is less likely than nickel and zinc to be mobile as it is part of the crystalline structure of the minerals.

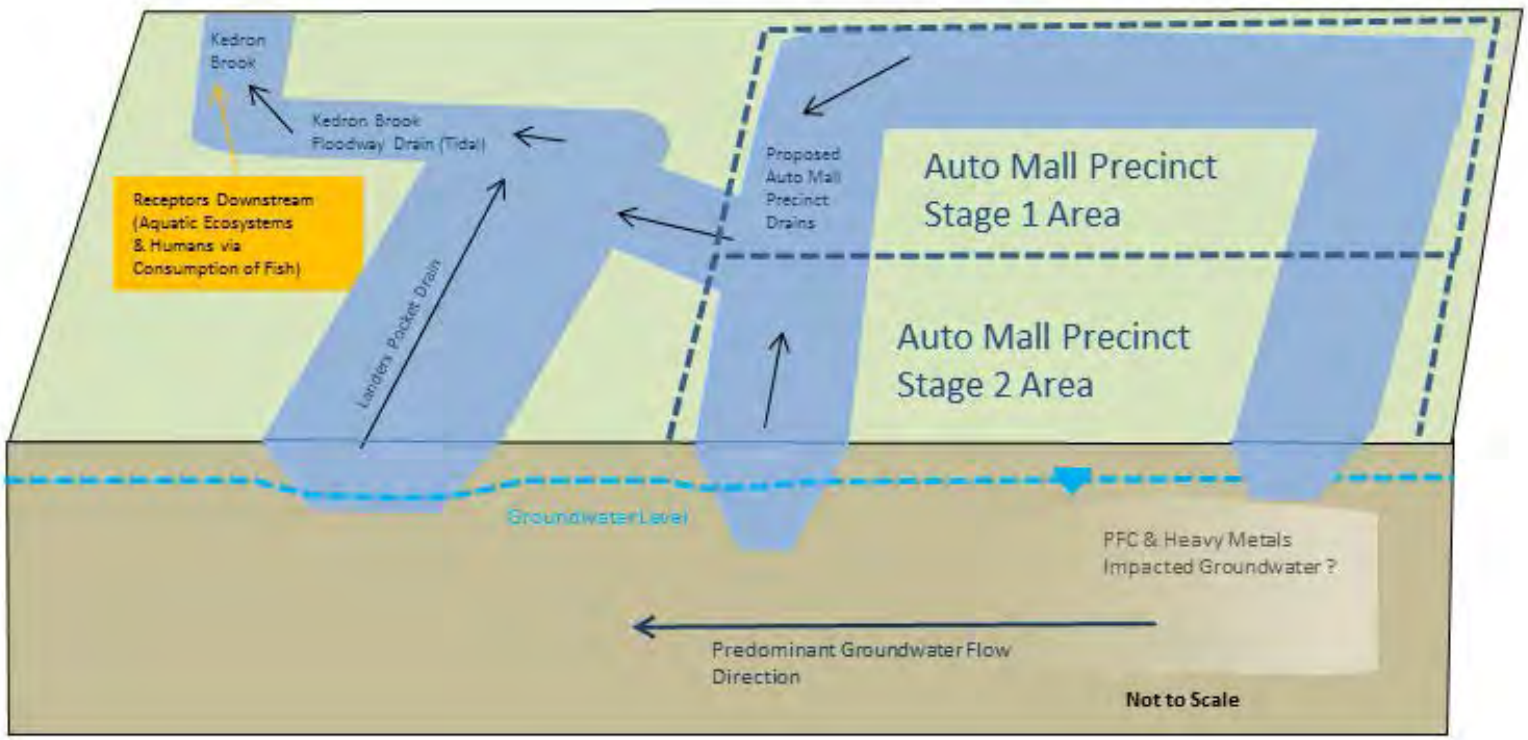
Terrestrial ecosystems are not considered to be key receptors for the PFAS contamination as concentrations reported (in the parts per billion) in the groundwater are so low that their application to soil would not result in detection (in parts per million). The presence of nickel and zinc in soil has been assessed for the site using the 95% UCL approach and the results suggest that terrestrial ecosystems, in the current, undeveloped land use setting, are not a potential receptor. Titanium in the mineral sands has low bioavailability and is considered not to pose a risk to terrestrial ecosystems.

Results of the groundwater investigation and other Golder investigations within the vicinity of the site indicate that the groundwater quality beneath the proposed development is impacted with low levels of PFAS, due to historical offsite activities, and heavy metals. No further impacts to groundwater are expected due to site contamination. Furthermore, the brackish nature of the groundwater would make it unviable as a source of potable water, and unsuitable for agriculture or other beneficial use.

Site workers who may come in direct contact with groundwater are not considered to be key receptors as the PFAS concentrations detected in all groundwater samples were well below interim screening levels for drinking water, and dermal absorption via direct contact is not a pathway for PFAS in humans.

9.6 Conceptual Site Model Schematic

A schematic of the Auto Mall Precinct CSM is shown below.



10.0 ENVIRONMENTAL RISK ASSESSMENT

10.1 Qualitative Assessment

Risk is measured as a function of the likelihood and consequence of an event occurring. This risk assessment has been completed with the consideration of source - pathway - receptors, as described in the conceptual site model above and is in general accordance with the NEPM 2013.

The qualitative risk assessment was undertaken in general accordance with AS/NZS ISO 31000:2009 Risk management - Principles and guidelines and adopting the likelihood, consequence rankings summarised below.

Qualitative Risk Assessment Rankings

Likelihood (L)	Description	Consequences (C)	Description
1) Rare	Impact is unlikely to occur within lifetime of project operations. No further management or engineering controls are required to minimise potential for occurrence	1) Low	Negligible or acceptable impact. No further management or engineering controls are required assuming no change to current conditions.
2) Low	Minor management control may need to be considered to reduce likelihood of occurrence.	2) Low to Moderate	Impact may be acceptable. Further monitoring is required to establish potential significance. Implementation of simple management controls.
3) Moderate	Impact has moderate likelihood of occurrence. Appropriate management control can result in low likelihood of occurrence.	3) Moderate	Moderate impact. Potentially acceptable if appropriate management controls are implemented.
4) High	Appropriate management control may not be sufficient to minimise likelihood and thus engineering or design solution may need to be considered.	4) Moderate to High	Impact has the potential to be unacceptable. Further monitoring may be required to establish potential significance. Implementation of appropriate management controls is required.
5) Almost Certain	Impact is believed to be inevitable or has already occurred. Management controls cannot practically minimise likelihood of occurrence to acceptable levels. Engineering or design solutions are required, if possible.	5) High	Unacceptable impact. The potential impact has a high severity and cannot necessarily be managed, should it occur.

The resulting qualitative risk ranking matrix adopted for the assessment is presented below.

Qualitative Risk Assessment Ranking Matrix

Risk Ranking (RR)	Consequences (C)				
Likelihood (L)	1) Low	2) Low to Moderate	3) Moderate	4) Moderate to High	5) High
1) Rare	1 (Low)	2 (Low)	3 (Low)	4 (Low)	5 (Moderate)
2) Low	2 (Low)	4 (Low)	6 (Moderate)	8 (Moderate)	10 (Moderate)
3) Moderate	3 (Low)	6 (Moderate)	9 (Moderate)	12 (Moderate)	15 (High)
4) High	4 (Low)	8 (Moderate)	12 (Moderate)	16 (High)	20 (High)
5) Certain	5 (Moderate)	10 (Moderate)	15 (High)	20 (High)	25 (High)

Where:

- Low Risk Ranking: Score 0 to 4. Acceptable, no specific management and/or engineering controls typically necessary.
- Moderate Risk Ranking: Score 5 to 15. Potentially acceptable subject to appropriate management and/or engineering controls.
- High Risk Ranking: Score 15 and above. Not acceptable. Engineering controls generally required, possibly in conjunction with management controls. Ranking for the source-pathway-receptor identified in the CSM are summarised below.

Risk Rankings

Receptors	Pathways	Assessment Factors	L	C	RR	Summary Item
Human Receptors						
General Public	Consumption of Fish (Groundwater migration to surface water bodies) PFAS	A dilution factor of about 32[5] would be required to reduce the highest detected groundwater PFAS concentrations below interim screening levels. A much greater dilution factor is expected for discharge of groundwater into the nearby surface water bodies	1	3	3	Low risk No further control measures
	Consumption of Fish (Groundwater seepage into proposed site drains and discharge into nearby surface water bodies) PFAS	The above considerations also apply to this pathway. It is expected that discharge of the volume of groundwater into the proposed drains alone (not including rainfall runoff) into connecting tidal drains will result in a much greater dilution factor than 32 (the dilution factor required for the highest detected groundwater PFAS concentration)..	1	3	3	Low risk No further control measures
	Consumption of Fish (Stormwater runoff and stormwater discharge into proposed site drain and into nearby surface water bodies) PFAS	Concentrations of PFAS compounds in soil are in the same order of magnitude as in groundwater (when expressed as ppb). However, the extent of soil contamination is limited to a few locations, and not as diffused as in groundwater. Therefore the magnitude of PFAS impacts from erosion and leaching to surface water and hence fish, is considered low.	3	1	3	Low risk No further control measures

[5] Calculated as the maximum concentration of any PFAS compound in groundwater divided by the corresponding Human Health Screening Level.

Receptors	Pathways	Assessment Factors	L	C	RR	Summary Item
Ecological Receptors						
Aquatic ecosystems	Toxicity effects of heavy metals (Groundwater migration to surface water bodies)	A dilution factor of about 13[6] would be required to reduce the highest detected groundwater heavy metal concentrations below the proposed guideline. A much greater dilution factor is expected for discharge of groundwater into the nearby surface water bodies	1	2	2	Low risk No further control measures
	Toxicity effects of heavy metals (Groundwater seepage into proposed site drain and discharge into nearby surface water bodies)	The above considerations also apply to this pathway. It is expected that discharge of the volume of groundwater into the proposed drains alone (not including rainfall runoff) into connecting tidal drains will result in a much greater dilution factor than 13 (the dilution factor required for the highest detected groundwater heavy metal concentration).	1	2	2	Low risk No further control measures
	Toxicity effects of heavy metals (Stormwater runoff and stormwater discharge into proposed site drain and into nearby surface water bodies)	Concentrations of heavy metals compounds in soil are 3 orders of magnitude higher than in groundwater (when expressed as ppb). However, the extent of soil contamination is limited to a few locations, and not as diffused as in groundwater. Therefore the contribution of heavy metals impacts from erosion and leaching to surface water quality degradation is considered low.	3	1	3	Low risk No further control measures

[6] Calculated as the maximum concentration of any heavy metal exceeding guidelines in groundwater divided by the corresponding exceeded guideline.

11.0 CONCLUSION AND RECOMMENDATIONS

Based on the results of the contamination assessment, the following conclusions are drawn for Stage 2 of the Auto Mall precinct.

- No TRH, BTEX, PAH and OCP concentrations above the interim screening levels were detected in any soil samples.
- With reference to PFAS, diffuse low levels are noted in shallow soil at 4 locations, in the eastern and western portions of the site, though at levels not exceeding the adopted guidelines. Where disturbed, soils from this area should be suitable for reuse at other locations at the airport without restriction. The soils may also be suitable for offsite reuse subject to more detailed sampling of excavated materials.
- With reference to heavy metals, no exceedances of the AEPR guidelines are noted in the samples for any compounds. With reference to NEPM Guidelines, exceedances of the EILs are noted for nickel and zinc at a total of 4 locations in the eastern and western portions of the site. However, the 95% UCL statistical approach applied to shallow soil throughout the whole of Stage 2 indicated that the EILs are not exceeded. Titanium concentrations also appear elevated in shallow soil along the eastern portion of the site, possibly relating to the historical placement of mineral sands.
- PFAS impacts were reported in groundwater samples in all the 4 groundwater wells analysed. PFOS concentrations and the laboratory reporting limit exceed the interim screening level for human consumption of fish.
- Heavy metals exceedances of the AEPR Marine Waters guideline and NEPM 2013 Marine Waters GILs are noted in all wells for nickel and zinc.
- With reference to Ecological Receptors:
  - Aquatic ecosystems are not considered to be key receptors, as the PFAS concentrations in groundwater are below the interim screening levels for toxicity effects on aquatic organisms. However, a residual low risk to aquatic ecosystems is represented by heavy metals concentrations in groundwater and soil.
  - Terrestrial ecosystems are not considered susceptible to the impacts of PFAS or heavy metals contamination in soil.
- With reference to Human Receptors:
  - Site workers who may come in direct contact with groundwater are not considered to be key receptors, as the PFAS concentrations detected in all groundwater samples were well below interim screening levels for drinking water.
  - All groundwater samples had PFAS concentrations exceeding the surface water interim screening level for human consumption of fish/aquatic species. The interim screening level applies to the receiving water after dilution and its use to evaluate groundwater concentration (without dilution considerations) is conservative.
  - A qualitative risk assessment for the PFAS concentrations detected in groundwater beneath this site suggests a low risk outcome for subsequent human consumption of fish/aquatic species associated with groundwater migration to the nearby and downstream surface water bodies.
  - A qualitative risk assessment of expected PFAS impacted groundwater seepage entering the proposed site drain suggests a low risk outcome for subsequent human consumption of fish/aquatic species from downstream tidal drains and waterways.

Development of a Contamination Management Plan for Stage 2 of the Auto Mall Precinct is not considered to be warranted.

12.0 IMPORTANT INFORMATION

Your attention is drawn to the document *Important Information Relating to this Report*, which is included in **Appendix F** of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

Report Signature Page

GOLDER ASSOCIATES PTY LTD

Serena Curti	Andrew Howes
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SC/AWH/cs

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\\golder.gds\gap\brisbane\jobs\geo\2015\1538021-bac autoprecinct bne airport\correspondence out\1538021-011-r-rev1-auto mall stage 2 contamination report.docx

FIGURE

MORETON DRIVE

QANTAS DR

PERIMETER RD

AIRPORT DR

NANCY BIRD WAY

STAGE 2

STAGE 1

CSR Site 28

AM-BH13
AM-BH26
AM-BH25
AM-MW14
AM-BH24
AM-MW10
AM-BH09
AM-BH08
AM-BH07
AM-BH23
AM-BH22
AM-BH20
AM-BH18
AM-BH21
AM-BH19
BIP/MW1
AM-BH06
AM-MW15
AM-BH05
AM-BH29
AM-MW16
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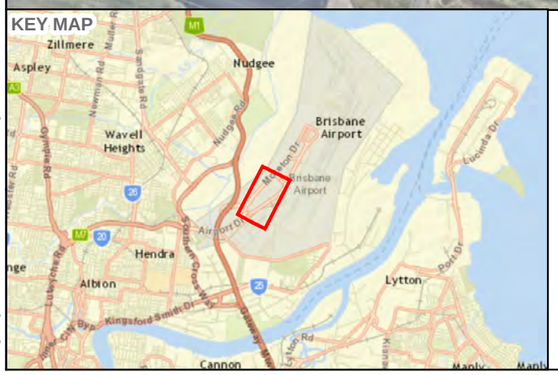
AM-BH28

KEY MAP



LEGEND

- BAC CSR (2008)
- Site Boundary

Current Investigation

- Borehole
- Monitoring Well

Previous Investigations

- Borehole
- Monitoring Well

NOTES

1. AERIAL PHOTOGRAPHY SUPPLIED BY NEARMAP LTD, DATED OCTOBER 2014
2. DEVELOPMENT YIELD PLAN LAYOUT SUPPLIED BY BAC AS CAD FILE 'BRIS0012 SK-004[E] DEVELOPMENT YIELD PLAN.PDF.DWG'
3. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P CORP., NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI (THAILAND), MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

0 100 200 300 metres

REFERENCE SCALE: 1:4,500 (AT A3)
PROJECTION: GDA 1994 MGA ZONE 56

CLIENT
BRISBANE AIRPORT CORPORATION

PROJECT
AUTO PRECINCT

TITLE
PROPOSED DEVELOPMENT WITH PREVIOUS AND CURRENT CONTAMINATION INVESTIGATION LOCATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-14
PREPARED	DP
DESIGN	DP
REVIEW	SC
APPROVED	SC

PROJECT No.	CONTROL	Rev.	FIGURE
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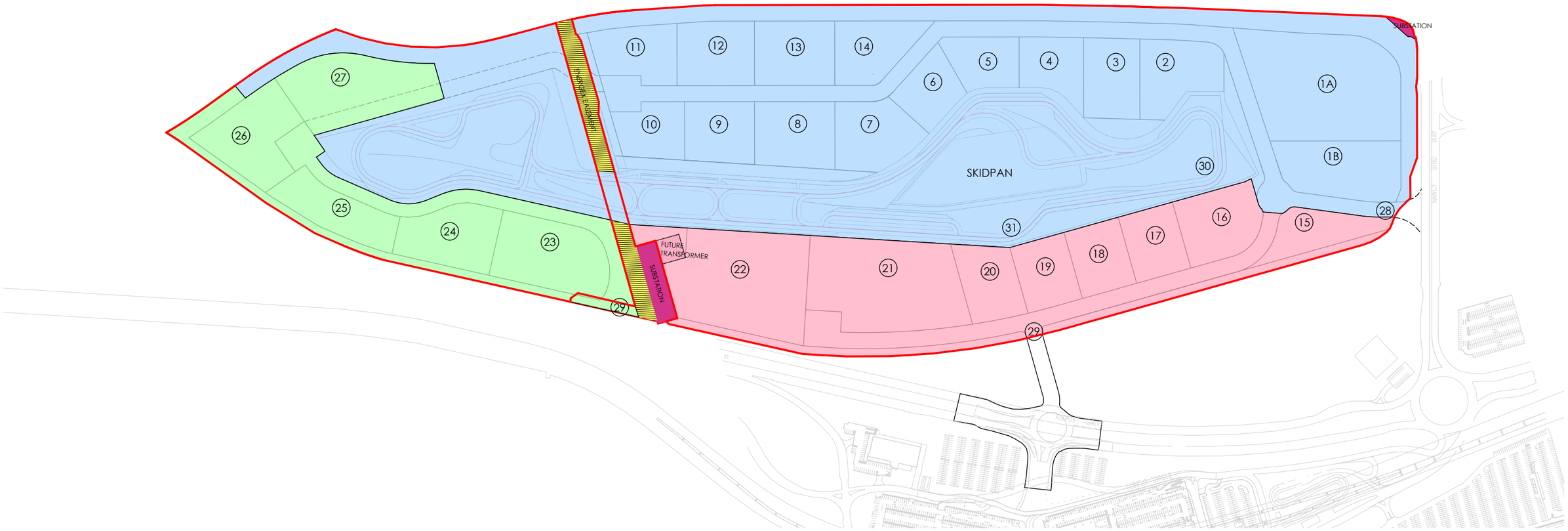
APPENDIX A

Proposed Development Plans



INDICATIVE STAGE ONE

INDICATIVE STAGE TWO

INDICATIVE STAGE THREE

BAC

BAC DRIVER EXPERIENCE CENTRE

STAGING PLAN

MLDesign

112Bowen StreetBowen Street, Brisbane, Qld. 4000, Australia
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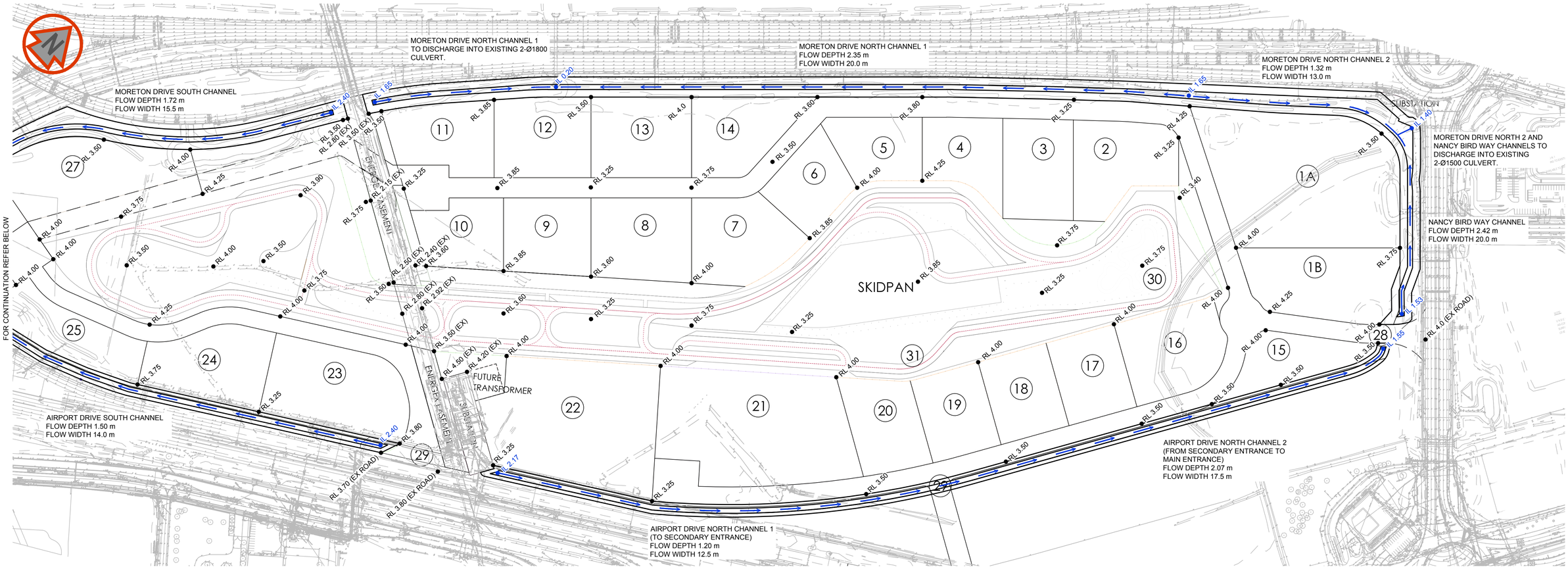

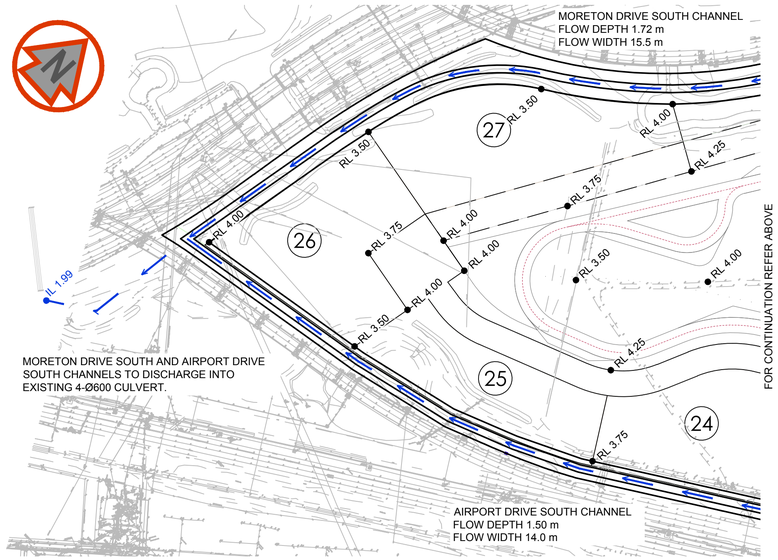

PRELIMINARY

Revision	Amendment	Approved	Revision Date
A	PRELIMINARY ISSUE	SRN	2016-09-02

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Designed	Approved	Approved Date
J LUTWYCHE	S NOVAK	

Drawn	Scales
J LUTWYCHE	1:2000 (A1), 1:4000 (A3)

Project
BRISBANE AIRPORT CORPORATION
AUTO MALL PRECINCT

Sheet
SITE GRADING AND DRAINAGE
LAYOUT PLAN

Project No.	Sheet. No.	Revision
Q-B4176.00	SK08	A

1:2000 @ A1
1:4000 @ A3
0 20 40 60 80 100 120 140 160 180 200 m

APPENDIX B

Borehole Reports

REPORT OF BOREHOLE: AM-BH10/MW10

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509477.0 m E 6969430.4 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 3.14 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
PT	L	25/10/16	-1.0									650 mm stick up PVC; 50 mm dia. PVC
			-0.5									
			-0.0	3.14	ASS 0.00-0.25 m R = 0A PID = 0.8 ppm			SM	TOPSOIL: Silty SAND fine to medium grained, brown, with some fine to medium, sub-angular gravel	D - M		
				0.15 / 2.99				CH	CLAY high plasticity, dark grey			Concrete
			0.5		ASS 0.25-0.50 m R = 0B; J 0.25-0.50 m R = 0B; ASS 0.50-0.75 m R = 0B PID = 0.6 ppm; ASS 0.75-1.00 m R = 0B; J 0.75-1.00 m R = 0B							Bentonite seal
			1.0	1.10 / 2.04	ASS 1.00-1.25 m R = 0B PID = 0.8 ppm				trace rootlets from 1.1 m to 1.15 m			
			1.5		ASS 1.25-1.50 m R = 0B; ASS 1.50-1.75 m R = 0B PID = 1.3 ppm					M - W		Filter sand
			2.0		ASS 1.75-2.00 m R = 0B; J 1.75-2.00 m R = 0B; ASS 2.00-2.25 m R = 0B PID = 1.8 ppm; ASS 2.25-2.50 m R = 0B							0.4 mm aperture slots
			2.5		ASS 2.50-2.75 m R = 0B PID = 1.8 ppm; ASS 2.75-3.00 m R = 0B; J 2.75-3.00 m R = 0B							
			-3.0	0.14					END OF BOREHOLE @ 3.00 m TARGET DEPTH STANDPIPE INSTALLED			End cap
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH13

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509616.0 m E 6968587.8 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 4.22 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	06/10/16	0.0	4.22	ASS 0.00-0.25 m R = 0A PID = 4.5 ppm			SM	Silty SAND fine to medium grained, brown, trace rootlets	D		TOPSOIL
				0.20 4.02	ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			CI	Sandy CLAY medium plasticity, red brown, fine to medium sand			FILL
			0.5	0.50 3.72	ASS 0.50-0.75 m R = 0A PID = 4.4 ppm				some fine to medium, sub-angular gravel from 0.5 m to 0.75 m	D - M		
				0.75 3.47	ASS 0.75-1.00 m R = 0A J 0.75-1.00 m R = 0A			GW	Sandy Clayey GRAVEL fine to medium grained, to 20 mm, sub-angular, pale brown, fine to coarse sand			
			1.0	1.00 3.22	ASS 1.00-1.25 m R = 0A PID = 5.5 ppm			GW	Clayey Sandy GRAVEL fine to medium grained, to 15 mm, sub-angular, red brown, fine to coarse sand	D		
				1.25 2.97	ASS 1.25-1.50 m R = 0A				change to dark grey			
			1.5		ASS 1.50-1.75 m R = 0B PID = 4.7 ppm							
				1.65 2.57	ASS 1.75-2.00 m R = 0B J 1.75-2.00 m R = 0B			CH	Silty CLAY high plasticity, dark grey black			NATURAL
			2.0		ASS 2.00-2.25 m R = 0B PID = 3.3 ppm					M		
				2.35 1.87	ASS 2.25-2.50 m R = 0B			SC	Clayey SAND fine to medium grained, dark grey, medium to high plasticity clay			
			2.5		ASS 2.50-2.75 m R = 0B PID = 3.4 ppm					M - W		
					ASS 2.75-3.00 m R = 0B J 2.75-3.00 m R = 0B					W		
			3.0	1.22					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH14/MW14

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509585.9 m E 6968479.0 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 4.08 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 2.80 m	CHECKED: KRB DATE: 22/11/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
PT	L	25/10/16	-1.0									650 mm stick up PVC; 50 mm dia. PVC
			-0.5									
			-0.0	4.08	ASS 0.00-0.25 m R = 0A PID = 0.6 ppm			SM	TOPSOIL: Silty SAND fine to medium grained, brown, trace rootlets			Concrete
				0.20								
				3.88	ASS 0.25-0.50 m R = 0A			GP	FILL: Clayey GRAVEL fine to medium grained, to 12 mm, sub-angular to angular, grey, medium to high plasticity clay, with some fine to medium grain sand			
				0.35								
				3.73	J 0.25-0.50 m R = 0A			CH	FILL: CLAY high plasticity, brown, with some fine to medium grain sand			Bentonite seal
			0.5	0.55	ASS 0.50-0.75 m R = 0A PID = 0.7 ppm							
				3.53				GM	FILL: Sandy Silty GRAVEL fine to medium grained, to 15 mm, angular, grey, fine to coarse sand	D		
					ASS 0.75-1.00 m R = 0A J 0.75-1.00 m R = 0A							
			1.0		ASS 1.00-1.25 m R = 1A							
				1.10								
				2.98	PID = 0.7 ppm			CL-CI	Sandy CLAY low to medium plasticity, grey mottled yellow, fine to medium sand, with some fine, sub-angular grain gravel			
				1.20								
				2.88				CH				
				1.30	ASS 1.25-1.50 m R = 0A							
				2.78				CI-CH	CLAY high plasticity, red brown, trace fine, sub-angular grain gravel			
				1.45								
			1.5	2.63				CH	Silty CLAY medium to high plasticity, dark grey brown			
					ASS 1.50-1.75 m R = 1A PID = 0.6 ppm				CLAY high plasticity, dark grey mottled yellow	M		Filter sand
					ASS 1.75-2.00 m R = 1A J 1.75-2.00 m R = 1A							
			2.0		ASS 2.00-2.25 m R = 1A							0.4 mm aperture slots
				2.15	PID = 0.7 ppm							
				1.93				CI	Sandy CLAY medium plasticity, grey mottled orange, fine to medium sand			
					ASS 2.25-2.50 m R = 1A							
				2.45								
			2.5	1.63				SC	Clayey SAND fine to medium grained, brown, medium to high plasticity clay	M - W		
					ASS 2.50-2.75 m R = 0A PID = 1 ppm							
					ASS 2.75-2.80 m R = 0A J 2.75-2.80 m R = 0A							
				1.28					END OF BOREHOLE @ 2.80 m TARGET DEPTH STANDPIPE INSTALLED			End cap
			3.0									
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH15/MW15

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509902.6 m E 6968555.4 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 3.14 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 7/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling | **Sampling** | **Field Material Description**

METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
PT	L	25/10/16	-1.0									650 mm stick up PVC; 50 mm dia. PVC
			-0.5									
			-0.0	3.14	ASS 0.00-0.25 m R = 0A			SM	TOPSOIL: Silty SAND fine to medium grained, dark brown, trace rootlets			Concrete
				0.10 / 3.04	J 0.00-0.10 m R = 0A PID = 6.5 ppm			CI-CH	Silty CLAY medium to high plasticity, dark brown, with some fine to medium sand	D - M		
				0.35	ASS 0.25-0.50 m							Bentonite seal
				0.40 / 2.74	R = 0A J 0.25-0.50 m R = 0A			SM CH	Silty SAND fine to medium grained, pale yellow			
			0.5	0.55 / 2.59	ASS 0.50-0.75 m R = 1B PID = 6.8 ppm			CH	CLAY high plasticity, brown mottled orange, trace fine to coarse sand			
					ASS 0.75-1.00 m R = 0B J 0.75-1.00 m R = 0B				CLAY high plasticity, grey, with some fine to medium sand			
			1.0		ASS 1.00-1.25 m R = 0B PID = 7.8 ppm					M		
					ASS 1.25-1.50 m R = 0B							
			1.5		ASS 1.50-1.75 m R = 0B PID = 9 ppm							
				1.80 / 1.34	ASS 1.75-2.00 m R = 1B J 1.75-2.00 m R = 1B			CI	Sandy CLAY medium plasticity, grey mottled orange, fine to medium sand			Filter sand
			2.0		ASS 2.00-2.25 m R = 1B PID = 7.2 ppm							0.4 mm aperture slots
					ASS 2.25-2.50 m R = 1B					W		
				2.40 / 0.74				SC	Clayey SAND fine to medium grained, dark grey, trace timber up to 10 mm dia			
			2.5		ASS 2.50-2.75 m R = 0B PID = 5.5 ppm							
				2.70 / 0.44	ASS 2.75-3.00 m R = 0B J 2.75-3.00 m R = 0B			CI-CH	CLAY medium to high plasticity, dark grey, with some fine to medium sand	M - W		
			-3.0	0.14					END OF BOREHOLE @ 3.00 m TARGET DEPTH STANDPIPE INSTALLED			End cap
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH16/MW16

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 510075.2 m E 6968683.3 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.42 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 7/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
PT	L	25/10/16	-1.0									650 mm stick up PVC; 50 mm dia. PVC
			-0.5									
			0.0	2.42	ASS 0.00-0.25 m R = 0A PID = 3.5 ppm			CI-CH	Silty CLAY medium to high plasticity, dark brown, with some fine to medium grain sand, trace rootlets	D		Concrete
				0.15 / 2.27				CH	CLAY high plasticity, grey mottled orange			Bentonite seal
			0.5		ASS 0.25-0.50 m R = 1B; J 0.25-0.50 m R = 1B; ASS 0.50-0.75 m R = 1B PID = 2.9 ppm; ASS 0.75-1.00 m R = 1B; J 0.75-1.00 m R = 1B					M		
			1.0		ASS 1.00-1.25 m R = 1B PID = 2.3 ppm							
				1.30 / 1.12	ASS 1.25-1.50 m R = 1B				with some fine to medium sand from 1.3 m to 2.1 m			
			1.5		ASS 1.50-1.75 m R = 1B PID = 3.4 ppm; ASS 1.75-2.00 m R = 1B; J 1.75-2.00 m R = 1B					M - W		Filter sand
			2.0	2.10 / 0.32	ASS 2.00-2.25 m R = 1B PID = 3.4 ppm; ASS 2.25-2.50 m R = 0B			SC	Clayey SAND fine to medium grained, dark grey mottled green			0.4 mm aperture slots
			2.5	2.60 / -0.18	ASS 2.50-2.75 m R = 0B PID = 2.5 ppm			CI	Sandy CLAY medium plasticity, dark grey, fine to medium sand	W		
				2.85 / -0.43	ASS 2.75-3.00 m R = 0B; J 2.75-3.00 m R = 0B			SC	Clayey SAND fine to medium grained, dark grey			
			3.0	-0.58					END OF BOREHOLE @ 3.00 m TARGET DEPTH STANDPIPE INSTALLED			End cap
			3.5									
			4.0									

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REPORT OF BOREHOLE: AM-BH21

Golder Associates

SHEET: 1 OF 1

CLIENT: Brisbane Airport Corporation
PROJECT: BAC Auto Mall Precinct
LOCATION: Brisbane Airport
JOB NO: 1538021

COORDS: 509926 m E 6968761 m N MGA94 56
SURFACE RL: 2.5 m DATUM: AD
INCLINATION: -90°
HOLE DEPTH: 1.80 m

DRILL RIG: Comacchio 305
CONTRACTOR: MGS
LOGGED: TAS DATE: 17/12/15
CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	Groundwater not observed	0.0	2.50	J 0.00-0.50 m R = 0A PID = 0.4 ppm			GW	Sandy GRAVEL fine to coarse grained, angular, fine to medium grained sand, trace rootlets			FILL
				0.25 / 2.25				CI	Sandy CLAY medium plasticity, brown, fine to medium grained sand	D		NATURAL
			0.5	0.60 / 1.90	J 0.50-1.00 m R = 0A PID = 0.5 ppm			CH	CLAY high plasticity, brown to grey with orange pockets			
				0.90 / 1.60				CI	Sandy CLAY medium plasticity, fine grained sand	M		
			1.0	1.40 / 1.10	J 1.00-1.50 m R = 0A PID = 0.5 ppm				pockets of red/orange			
			1.5	0.70					END OF BOREHOLE @ 1.80 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH22

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509904 m E 6968799 m N MGA94 56	DRILL RIG: Comacchio 305
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.5 m DATUM: AD	CONTRACTOR: MGS
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: TAS DATE: 17/12/15
JOB NO:	1538021	HOLE DEPTH: 1.80 m	CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L	Groundwater not observed	0.0	2.50	J 0.00-0.50 m R = 0A PID = 0.3 ppm			SC	Clayey SAND fine to medium grained, brown, with some fine to coarse, subangular, up to 30 mm gravel, trace rootlets	D		FILL
			0.5		J 0.50-1.00 m R = 0A PID = 0.3 ppm							
				0.67 1.83				CH	CLAY high plasticity, dark brown, trace wood fragments to 1.3 m			NATURAL
			1.0		J 1.00-1.50 m R = 0A PID = 0.7 ppm					M		
				1.30 1.20					grey			
			1.5									
				0.70					END OF BOREHOLE @ 1.80 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH23

Golder Associates

SHEET: 1 OF 1

CLIENT: Brisbane Airport Corporation
PROJECT: BAC Auto Mall Precinct
LOCATION: Brisbane Airport
JOB NO: 1538021

COORDS: 509875 m E 6968821 m N MGA94 56
SURFACE RL: 2.5 m DATUM: AD
INCLINATION: -90°
HOLE DEPTH: 1.80 m

DRILL RIG: Comacchio 305
CONTRACTOR: MGS
LOGGED: TAS DATE: 17/12/15
CHECKED: KRB DATE: 21/1/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADH	L		0.0	2.50	J 0.00-0.50 m R = 0A PID = 0.4 ppm				BOULDERS	D		FILL
				0.20								
				2.30				CH	CLAY high plasticity, dark brown to grey	D - M		NATURAL
				0.45								
			0.5	2.05	J 0.50-1.00 m R = 0A PID = 0.7 ppm			CI	Sandy CLAY medium plasticity, grey, fine grained sand			
				0.60								
				1.87				CH	gravelly sand lense 30 mm thick CLAY high plasticity, dark brown to grey			
				0.83								
				1.67				CI	Sandy CLAY medium plasticity, grey with brown pockets, fine to medium grained sand			
			1.0		J 1.00-1.50 m R = 0A PID = 0.3 ppm					M		
			1.5									
		17/12/15		1.60								
				0.90				SP	SAND fine to medium grained, grey, with some clay lenses	W		
				0.70					END OF BOREHOLE @ 1.80 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 1.60 m DEPTH BACKFILLED CONTAM SAMPLES TAKEN AT 0.5 m INTERVALS			
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01a RL3

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REPORT OF BOREHOLE: AM-BH18

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509880.4 m E 6968707.0 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 2.75 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	06/10/16	0.0	2.75	ASS 0.00-0.25 m R = 0A PID = 2.1 ppm ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			GP	Silty Sandy GRAVEL fine to medium grained, to 15 mm, angular, grey, fine to medium sand, trace rootlets	D		FILL
			0.5	0.40 2.35	ASS 0.50-0.75 m R = 0A PID = 2.6 ppm ASS 0.75-1.00 m R = 0B J 0.75-1.00 m R = 0B ASS 1.00-1.25 m R = 0B PID = 2.3 ppm ASS 1.25-1.50 m R = 0B ASS 1.50-1.75 m R = 0B PID = 2.3 ppm ASS 1.75-2.00 m R = 0B J 1.75-2.00 m R = 1B ASS 2.00-2.25 m R = 1B PID = 2.1 ppm ASS 2.25-2.50 m R = 1B ASS 2.50-2.75 m R = 1B PID = 1.7 ppm ASS 2.75-3.00 m R = 0B J 2.75-3.00 m R = 0B			CI	Sandy CLAY medium plasticity, brown, fine to medium sand	M		NATURAL
			1.0	0.80 1.95				CH	CLAY high plasticity, grey			
			1.5	1.10 1.65				CI	Sandy CLAY medium to high plasticity, grey mottled orange, fine sand	M - W		
			2.0	2.05 0.70				SC	Clayey SAND fine to medium grained, grey mottled orange, medium to high plasticity clay	W		
			2.5	2.90 -0.15				CL-CI	Sandy CLAY low to medium plasticity, dark grey, fine to medium sand			
			3.0	-0.25					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH24

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509682.3 m E 6968611.5 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 4.19 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	06/10/16	0.0	4.19	ASS 0.00-0.25 m R = 0A			SM	Silty SAND fine to medium grained, brown, trace rootlets	D		TOPSOIL
				0.15 / 4.04	ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			GW	Silty Sandy GRAVEL fine to medium grained, to 15 mm, angular, grey, fine to coarse sand	D - M		FILL
			0.5	0.40 / 3.79	ASS 0.50-0.75 m R = 0A			GC	Clayey GRAVEL fine to medium grained, to 10 mm, sub-angular, red grey, medium to high plasticity clay, with some fine to medium grain sand			
				0.80 / 3.39	ASS 0.75-1.00 m R = 0A J 0.75-1.00 m R = 0A			CI-CH	CLAY medium to high plasticity, dark grey mottled green, with some fine to medium grain, rounded gravel	M		NATURAL
			1.0		ASS 1.00-1.25 m R = 0A J 1.10-1.20 m R = 1A							
				1.30 / 2.89	ASS 1.25-1.50 m R = 0A			ML-MH	Clayey Sandy SILT low to medium liquid limit, pale red mottled white, fine to medium sand, with some medium grain, sub-angular to angular gravel			
			1.5	1.45 / 2.74	ASS 1.50-1.75 m R = 0A			CH	CLAY medium to high plasticity, dark grey, with some fine to medium grain sand			
					ASS 1.75-2.00 m R = 1B J 1.75-2.00 m R = 1B							
			2.0	2.05 / 2.14	ASS 2.00-2.25 m R = 0B				with some fine to medium grain sand from 2.05 m to 2.35 m			
				2.35 / 1.84	ASS 2.25-2.50 m R = 1B			SC	Clayey SAND fine to medium grained, brown grey, medium to high plasticity clay	M - W		
			2.5		ASS 2.50-2.75 m R = 1B							
					ASS 2.75-3.00 m R = 1B J 2.75-3.00 m R = 1B							
			3.0	1.19					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH25

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509624.7 m E 6968635.0 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 3.79 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0	3.79	ASS 0.00-0.25 m R = 0A PID = 5.9 ppm			SM	Silty SAND fine to medium grained, brown, trace rootlets	D		TOPSOIL
				0.15 3.64 0.25				SM	Silty Gravelly SAND fine to medium grained, brown, fine to medium, sub-angular gravel			FILL
				3.54	ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A ASS 0.50-0.75 m R = 0A J 0.50-0.60 m R = 1A			CI-CH	Silty CLAY medium to high plasticity, dark grey black, with some fine to coarse grain sand, trace rootlets	D - M		NATURAL
			0.5	0.70 3.09					NO SAMPLE RECOVERED			
			1.0									
PT	L		1.5	1.50 2.29	ASS 1.50-1.75 m R = 0B PID = 8 ppm ASS 1.75-2.00 m R = 1B J 1.75-2.00 m R = 1B ASS 2.00-2.25 m R = 0B PID = 5.8 ppm			CH	CLAY high plasticity, dark grey mottled green, with some fine to coarse grain sand	M		
			2.0	2.15 1.64	ASS 2.25-2.50 m R = 0A ASS 2.50-2.75 m R = 0A PID = 4.4 ppm			CL-CI	Sandy CLAY low to medium plasticity, grey mottled orange, fine to medium sand	M - W		
		06/10/16	2.5	2.70 1.09	ASS 2.75-3.00 m R = 0A J 2.75-3.00 m R = 0A			SC	Clayey SAND fine to medium grained, brown grey	W		
			3.0	0.79					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH26

SHEET: 1 OF 1

CLIENT:	Brisbane Airport Corporation	COORDS: 509604.2 m E 6968536.0 m N MGA94 56	DRILL RIG: Geoprobe 7822
PROJECT:	BAC Auto Mall Precinct	SURFACE RL: 4.03 m DATUM: AD	CONTRACTOR: Numac
LOCATION:	Brisbane Airport	INCLINATION: -90°	LOGGED: MJM DATE: 6/10/16
JOB NO:	1538021	HOLE DIA: 100 mm HOLE DEPTH: 3.00 m	CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	06/10/16	0.0	4.03	ASS 0.00-0.25 m R = 0A PID = 3.6 ppm			SM	Silty SAND fine to medium grained, brown, trace rootlets			TOPSOIL
				0.30 3.73	ASS 0.25-0.50 m R = 0A J 0.25-0.50 m R = 0A			GM	Silty Sandy GRAVEL fine to medium grained, to 15 mm, angular, grey, fine to coarse sand	D		FILL
			0.5	0.60 3.43 0.70 3.33 0.80	ASS 0.50-0.75 m R = 0A PID = 4.4 ppm ASS 0.75-1.00 m			GP GW	GRAVEL fine to medium grained, to 12 mm, angular, grey, with some fine to coarse grain sand			
				3.23	R = 0A J 0.75-1.00 m R = 0A			CI	Silty Sandy GRAVEL fine to medium grained, to 10 mm, angular, grey, fine to coarse sand			
			1.0	1.05 1.10 2.93	ASS 1.00-1.25 m R = 0A PID = 4.7 ppm			GP CI-CH	Sandy CLAY medium plasticity, grey brown, fine to coarse sand, with some fine grain, sub-angular gravel	D - M		NATURAL
				1.30 2.73	ASS 1.25-1.50 m R = 0A			CH	GRAVEL fine to medium grained, to 20 mm, angular, grey, with some fine to coarse grain sand			
			1.5		ASS 1.50-1.75 m R = 0B PID = 4.8 ppm				Silty CLAY medium to high plasticity, grey brown, with some fine to coarse grain sand CLAY high plasticity, dark brown			
				1.75 2.28	ASS 1.75-2.00 m R = 1B J 1.75-2.00 m R = 1B				mottled black from 1.75 m to 2.0 m	M		
			2.0		ASS 2.00-2.25 m R = 0B PID = 4.3 ppm							
				2.30 1.73	ASS 2.25-2.50 m R = 0A			SC	Clayey SAND fine to medium grained, brown grey			
			2.5		ASS 2.50-2.75 m R = 0A PID = 3.7 ppm					M - W		
					ASS 2.75-3.00 m R = 0A J 2.75-3.00 m R = 0A					W		
			3.0	1.03					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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REPORT OF BOREHOLE: AM-BH29

Golder Associates

SHEET: 1 OF 1

CLIENT: Brisbane Airport Corporation
PROJECT: BAC Auto Mall Precinct
LOCATION: Brisbane Airport
JOB NO: 1538021

COORDS: 510018.4 m E 6968636.0 m N MGA94 56
SURFACE RL: 2.95 m DATUM: AD
INCLINATION: -90°
HOLE DIA: 100 mm HOLE DEPTH: 3.00 m

DRILL RIG: Geoprobe 7822
CONTRACTOR: Numac
LOGGED: MJM DATE: 7/10/16
CHECKED: KRB DATE: 22/11/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	L	07/10/16	0.0	0.05 2.90	ASS 0.00-0.25 m R = 0A J 0.00-0.10 m R = 0A PID = 9 ppm			SM CI-CH	Silty SAND fine to medium grained, dark brown, trace rootlets Silty CLAY medium to high plasticity, dark brown, with some fine to medium grain sand, trace rootlets mottled orange from 0.3 m to 1.0 m	D D - M		TOPSOIL FILL
				0.30 2.65	ASS 0.25-0.50 m R = 1A J 0.25-0.50 m R = 1A ASS 0.50-0.75 m R = 1A PID = 9.1 ppm ASS 0.75-1.00 m R = 1B J 0.75-1.00 m R = 1B							
			0.5									
			1.0	1.00 1.95	ASS 1.00-1.25 m R = 1B PID = 9.2 ppm ASS 1.25-1.50 m R = 1B			CI	Sandy CLAY medium plasticity, dark grey mottled orange, fine to medium sand	M		NATURAL
			1.5	1.50 1.45	ASS 1.50-1.75 m R = 1B PID = 9.2 ppm ASS 1.75-2.00 m R = 1B J 1.75-2.00 m R = 1B			SC	Clayey SAND fine to medium grained, dark grey mottled orange	W		
			2.0		ASS 2.00-2.25 m R = 1B PID = 9.5 ppm ASS 2.25-2.50 m R = 1B							
			2.5		ASS 2.50-2.75 m R = 1B PID = 4 ppm ASS 2.75-3.00 m R = 0B J 2.75-3.00 m R = 0B							
				2.85 0.10				CI	Sandy CLAY medium plasticity, dark grey, fine to medium sand			
			3.0	-0.05					END OF BOREHOLE @ 3.00 m TARGET DEPTH BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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APPENDIX C

Laboratory Documents

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1624693**	Page	: 1 of 78
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016 16:00
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 21-Oct-2016 17:01
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 74		
No. of samples analysed	: 73		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005T (Total Metals): Sample EB1624693-002 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.1	8.2	7.8	7.5	7.3
ø pH (Fox)	----	0.1	pH Unit	4.8	6.3	5.8	5.5	5.4
ø Reaction Rate	----	1	-	2	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	4.7	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	211	----	----	----
Copper	7440-50-8	5	mg/kg	----	70	----	----	----
Lead	7439-92-1	5	mg/kg	----	<5	----	----	----
Nickel	7440-02-0	2	mg/kg	----	82	----	----	----
Zinc	7440-66-6	5	mg/kg	----	32	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 0-0.25	AM-BH26 0.25-0.5	AM-BH26 0.5-0.75	AM-BH26 0.75-1	AM-BH26 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-001	EB1624693-002	EB1624693-003	EB1624693-004	EB1624693-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	101	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	84.9	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	108	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	107	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	104	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	114	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	121	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	123	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	111	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	111	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	124	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	99.8	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	6.8	7.8	5.0	6.5
ø pH (Fox)	----	0.1	pH Unit	5.4	4.2	2.9	3.0	4.8
ø Reaction Rate	----	1	-	3	3	3	3	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 1.25-1.5	AM-BH26 1.5-1.75	AM-BH26 1.75-2	AM-BH26 2-2.25	AM-BH26 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-006	EB1624693-007	EB1624693-008	EB1624693-009	EB1624693-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.6	7.0	4.7	4.3
ø pH (Fox)	----	0.1	pH Unit	5.3	5.8	3.6	2.9	2.8
ø Reaction Rate	----	1	-	2	2	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.2	----	24.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	14	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	65	----
Copper	7440-50-8	5	mg/kg	----	----	----	15	----
Lead	7439-92-1	5	mg/kg	----	----	----	10	----
Nickel	7440-02-0	2	mg/kg	----	----	----	18	----
Zinc	7440-66-6	5	mg/kg	----	----	----	61	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH26 2.5-2.75	AM-BH26 2.75-3	AM-BH18 0-0.25	AM-BH18 0.25-0.5	AM-BH18 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-011	EB1624693-012	EB1624693-014	EB1624693-015	EB1624693-016
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	108	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	97.3	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	105	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	108	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	104	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	114	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	116	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	121	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	81.8	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	94.5	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	117	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	99.1	----	93.4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.3	4.1	4.0	4.2	4.3
ø pH (Fox)	----	0.1	pH Unit	2.7	2.6	2.3	2.6	2.7
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	27.7
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 0.75-1	AM-BH18 1-1.25	AM-BH18 1.25-1.5	AM-BH18 1.5-1.75	AM-BH18 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-017	EB1624693-018	EB1624693-019	EB1624693-020	EB1624693-021
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	92.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.5	4.8	4.7	5.2	7.0
ø pH (Fox)	----	0.1	pH Unit	2.7	3.0	2.9	3.2	4.4
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH18 2-2.25	AM-BH18 2.25-2.5	AM-BH18 2.5-2.75	AM-BH18 2.75-3	AM-BH24 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-022	EB1624693-023	EB1624693-024	EB1624693-025	EB1624693-026
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	9.1	8.0	7.6	7.6	6.8
ø pH (Fox)	----	0.1	pH Unit	9.0	7.1	3.4	5.4	2.7
ø Reaction Rate	----	1	-	4	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	5.7	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	214	----	----	----	----
Copper	7440-50-8	5	mg/kg	80	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Nickel	7440-02-0	2	mg/kg	82	----	----	----	----
Zinc	7440-66-6	5	mg/kg	38	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 0.25-0.5	AM-BH24 0.5-0.75	AM-BH24 0.75-1	AM-BH24 1-1.25	AM-BH24 1.25-1.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-027	EB1624693-028	EB1624693-029	EB1624693-030	EB1624693-031
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**100**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**92.7**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**101**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**103**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**98.9**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**109**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**110**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**117**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**110**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**106**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**120**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**89.7**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.6	5.0	5.4	5.2	5.8
ø pH (Fox)	----	0.1	pH Unit	2.9	3.0	2.7	3.0	3.5
ø Reaction Rate	----	1	-	3	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 1.5-1.75	AM-BH24 1.75-2	AM-BH24 2-2.25	AM-BH24 2.25-2.5	AM-BH24 2.5-2.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-032	EB1624693-033	EB1624693-034	EB1624693-035	EB1624693-036
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	8.0	7.2	7.8	7.7
ø pH (Fox)	----	0.1	pH Unit	5.1	4.1	1.7	2.9	2.7
ø Reaction Rate	----	1	-	3	3	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	24.5	----	43.4	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	33	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	----	----	49	----	----
Copper	7440-50-8	5	mg/kg	----	----	31	----	----
Lead	7439-92-1	5	mg/kg	----	----	60	----	----
Nickel	7440-02-0	2	mg/kg	----	----	33	----	----
Zinc	7440-66-6	5	mg/kg	----	----	242	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH24 2.75-3	AM-BH10 0-0.25	AM-BH10 0.25-0.5	AM-BH10 0.5-0.75	AM-BH10 0.75-1
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-037	EB1624693-039	EB1624693-040	EB1624693-041	EB1624693-042
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	<0.0002	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	108	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	96.8	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	84.2	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	86.2	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	84.8	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	92.1	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	92.6	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	98.2	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	107	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	108	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	124	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	99.5	----	86.4	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.8	7.8	7.5	7.6	7.6
ø pH (Fox)	----	0.1	pH Unit	2.8	1.7	1.7	1.8	1.6
ø Reaction Rate	----	1	-	3	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	43.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	<0.0002	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 1-1.25	AM-BH10 1.25-1.5	AM-BH10 1.5-1.75	AM-BH10 1.75-2	AM-BH10 2-2.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-043	EB1624693-044	EB1624693-045	EB1624693-046	EB1624693-047
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	105	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.7	7.4	7.6	4.4	4.7
ø pH (Fox)	----	0.1	pH Unit	1.6	1.4	1.8	2.6	2.8
ø Reaction Rate	----	1	-	4	4	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	15.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	14
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	<1
Chromium	7440-47-3	2	mg/kg	----	----	----	----	65
Copper	7440-50-8	5	mg/kg	----	----	----	----	18
Lead	7439-92-1	5	mg/kg	----	----	----	----	12
Nickel	7440-02-0	2	mg/kg	----	----	----	----	16
Zinc	7440-66-6	5	mg/kg	----	----	----	----	44
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	<0.05
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH10 2.25-2.5	AM-BH10 2.5-2.75	AM-BH10 2.75-3	AM-BH32 0-0.25	AM-BH32 0.25-0.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-048	EB1624693-049	EB1624693-050	EB1624693-051	EB1624693-052
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	**110**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	**99.2**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	**107**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	**110**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	**111**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	**117**
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	**119**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	**125**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	**101**
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	**100**
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	**119**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	**89.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.6	4.9	5.2	5.0	5.9
ø pH (Fox)	----	0.1	pH Unit	2.6	2.2	1.4	1.6	1.6
ø Reaction Rate	----	1	-	3	3	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 0.5-0.75	AM-BH32 0.75-1	AM-BH32 1-1.25	AM-BH32 1.25-1.5	AM-BH32 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-053	EB1624693-054	EB1624693-055	EB1624693-056	EB1624693-057
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.6	6.6	6.8	7.1	7.1
ø pH (Fox)	----	0.1	pH Unit	1.5	1.6	1.6	1.8	1.9
ø Reaction Rate	----	1	-	4	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	27.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	**0.0002**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH32 1.75-2	AM-BH32 2-2.25	AM-BH32 2.25-2.5	AM-BH32 2.5-2.75	AM-BH32 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-058	EB1624693-059	EB1624693-060	EB1624693-061	EB1624693-062
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	**0.0002**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	**0.0002**
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	**0.0002**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	**100**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.2	7.9	5.9	4.5	4.1
ø pH (Fox)	----	0.1	pH Unit	6.2	5.3	3.7	2.8	2.4
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	17.8	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	8	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	51	----	----	----
Copper	7440-50-8	5	mg/kg	----	19	----	----	----
Lead	7439-92-1	5	mg/kg	----	9	----	----	----
Nickel	7440-02-0	2	mg/kg	----	38	----	----	----
Zinc	7440-66-6	5	mg/kg	----	47	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 0-0.25	AM-BH29 0.25-0.5	AM-BH29 0.5-0.75	AM-BH29 0.75-1	AM-BH29 1-1.25
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-063	EB1624693-064	EB1624693-065	EB1624693-066	EB1624693-067
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	**103**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	**87.0**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	**106**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	**104**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	**105**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	**114**	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	**117**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	**121**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	**106**	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	**104**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	**122**	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	**92.5**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.3	5.9	6.2	6.4	6.6
ø pH (Fox)	----	0.1	pH Unit	2.6	3.5	3.6	3.8	3.7
ø Reaction Rate	----	1	-	3	3	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	25.8	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	<0.0002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 1.25-1.5	AM-BH29 1.5-1.75	AM-BH29 1.75-2	AM-BH29 2-2.25	AM-BH29 2.25-2.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624693-068	EB1624693-069	EB1624693-070	EB1624693-071	EB1624693-072
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	<0.0002	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	<0.0002	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	112	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.2	7.5	----	----	----
ø pH (Fox)	----	0.1	pH Unit	2.1	2.4	----	----	----
ø Reaction Rate	----	1	-	3	4	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	15.6	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	7	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	----	----	42	----	----
Copper	7440-50-8	5	mg/kg	----	----	17	----	----
Lead	7439-92-1	5	mg/kg	----	----	9	----	----
Nickel	7440-02-0	2	mg/kg	----	----	27	----	----
Zinc	7440-66-6	5	mg/kg	----	----	41	----	----
Titanium	7440-32-6	10	mg/kg	----	----	250	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	1.8	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH29 2.5-2.75	AM-BH29 2.75-3	AM-BH29 0-0.1	----	----
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	----	----
Compound	CAS Number	LOR	Unit	EB1624693-073	EB1624693-074	EB1624693-075	--------	--------
				Result	Result	Result	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	138
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	23	135
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	155
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	157
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1624693**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 21-Oct-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 74		
No. of samples analysed	: 73		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA037: Ass Field Screening Analysis (QC Lot: 620369)									
EB1624693-001	AM-BH26 0-0.25	EA037: pH (F)	----	0.1	pH Unit	7.1	7.2	1.40	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.8	4.9	2.06	0% - 20%
EB1624693-011	AM-BH26 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	7.4	7.3	1.36	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.3	5.3	0.00	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620370)									
EB1624693-022	AM-BH18 2-2.25	EA037: pH (F)	----	0.1	pH Unit	4.5	4.4	2.25	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.7	2.8	3.64	0% - 20%
EB1624693-032	AM-BH24 1.5-1.75	EA037: pH (F)	----	0.1	pH Unit	5.6	5.6	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.9	2.8	3.51	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620371)									
EB1624693-043	AM-BH10 1-1.25	EA037: pH (F)	----	0.1	pH Unit	7.8	7.8	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.8	2.9	3.51	0% - 20%
EB1624693-053	AM-BH32 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	4.6	4.6	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.6	2.5	3.92	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 620372)									
EB1624693-063	AM-BH29 0-0.25	EA037: pH (F)	----	0.1	pH Unit	8.2	8.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	6.2	6.0	3.28	0% - 20%
EB1624693-073	AM-BH29 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	7.2	7.2	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.1	2.0	4.88	0% - 20%
EA055: Moisture Content (QC Lot: 620270)									
EB1624687-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	18.0	17.6	2.31	0% - 50%
EB1624766-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	10.0	9.8	1.20	No Limit
EA055: Moisture Content (QC Lot: 624690)									
EB1623981-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	4.8	4.6	4.61	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 624690) - continued									
EB1623981-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	25.5	26.2	2.67	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 620694)									
EB1624766-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	9	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	11	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	6	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	13	23.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	33	34	0.00	No Limit
EB1624693-002	AM-BH26 0.25-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	211	# 264	22.2	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	82	99	19.1	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	70	86	21.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	40	21.2	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 620696)									
EB1624693-075	AM-BH29 0-0.1	EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	1.8	2.2	20.8	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 620695)									
EB1624778-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1624693-002	AM-BH26 0.25-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620261)									
EB1624693-002	AM-BH26 0.25-0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620261) - continued									
EB1624693-002	AM-BH26 0.25-0.5	EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 620262)									
EB1624693-002	AM-BH26 0.25-0.5	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 620262)									
EB1624693-002	AM-BH26 0.25-0.5	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620263)									
EB1624693-002	AM-BH26 0.25-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 620268)									
EB1624693-002	AM-BH26 0.25-0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 621845) - continued									
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624693-064	AM-BH29 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 621845)									
EB1624693-002	AM-BH26 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 621845) - continued									
EB1624693-064	AM-BH29 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620694)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	113	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	103	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	111	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	93.3	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	103	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	102	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	109	87	127
EG020T: Total Metals by ICP-MS (QCLot: 620696)								
EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	<0.5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620695)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	99.7	78	122
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	82.8	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	79.9	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	77.2	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	72.4	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.2	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	94.1	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.5	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.7	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	83.7	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	76.3	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.0	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	70.9	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	91.4	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	55	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261) - continued								
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	104	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620262)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	97.4	47	112
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	106	55	108
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620262)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	93.1	46	115
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	109	53	113
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620263)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	89.5	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	101	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	90.5	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	96.8	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	81.3	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	90.7	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	101	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	99.4	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	90.9	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	98.6	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	84.3	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	82.4	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	69.0	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	65.9	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	73.7	64	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	85.1	66	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620268)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	82.7	66	119
EP080: BTEXN (QCLot: 620268)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	82.6	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	98.7	73	105

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP080: BTEXN (QCLot: 620268) - continued								
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	97.6	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	102	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	101	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	97.2	72	115
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 621845)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	67.8	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.3	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.8	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.7	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.8	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	64.8	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 621845)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00125 mg/kg	94.7	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.8	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	121	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.6	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.6	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	63.0	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.1	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 621845)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.6	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.4	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.6	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	86.3	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	68.2	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.3	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	107	61	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	102	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	109	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 620694)							
EB1624693-015	AM-BH18 0.25-0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	103	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	110	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	110	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	101	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	108	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	116	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	103	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620695)							
EB1624693-015	AM-BH18 0.25-0.5	EG035T: Mercury	7439-97-6	2.5 mg/kg	93.7	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620261)							
EB1624693-015	AM-BH18 0.25-0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	95.1	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	110	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	106	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	102	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	93.1	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	85.2	70	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620262)							
EB1624693-015	AM-BH18 0.25-0.5	EP071SG-S: C10 - C14 Fraction	----	318 mg/kg	97.2	47	130
		EP071SG-S: C15 - C28 Fraction	----	531 mg/kg	104	55	130
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620262)							
EB1624693-015	AM-BH18 0.25-0.5	EP071SG-S: >C10 - C16 Fraction	----	428 mg/kg	91.6	46	130
		EP071SG-S: >C16 - C34 Fraction	----	395 mg/kg	108	53	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620263)							
EB1624693-015	AM-BH18 0.25-0.5	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	103	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	114	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620268) - continued							
EB1624693-015	AM-BH18 0.25-0.5	EP080: C6 - C9 Fraction	----	8 mg/kg	91.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620268)							
EB1624693-015	AM-BH18 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	91.8	70	130
EP080: BTEXN (QCLot: 620268)							
EB1624693-015	AM-BH18 0.25-0.5	EP080: Benzene	71-43-2	2 mg/kg	73.0	70	130
		EP080: Toluene	108-88-3	2 mg/kg	77.2	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	52.5	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	62.8	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	74.7	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	75.0	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	90.2	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.00125 mg/kg	82.4	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00125 mg/kg	91.2	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	55.5	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	80.0	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	100.0	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	77.1	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	96.7	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	106	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.8	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	101	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	103	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	75.0	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	95.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	85.6	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	73.3	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.00312 mg/kg	51.5	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	47.2	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	117	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	88.6	30	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 621845)							
EB1624693-002	AM-BH26 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	98.8	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	66.0	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	112	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	111	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1624693**	Page	: 1 of 9
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Site	: Brisbane Airport	Issue Date	: 21-Oct-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 74
Order number	: 1538021	No. of samples analysed	: 73

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB1624693--002	AM-BH26 0.25-0.5	**Chromium**	7440-47-3	22.2 %	0% - 20%	**RPD exceeds LOR based limits**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH26 0-0.25,	AM-BH26 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	04-Apr-2017	✓	**18-Oct-2016**	04-Apr-2017	✓
AM-BH26 0.5-0.75,	AM-BH26 0.75-1,							
AM-BH26 1-1.25,	AM-BH26 1.25-1.5,							
AM-BH26 1.5-1.75,	AM-BH26 1.75-2,							
AM-BH26 2-2.25,	AM-BH26 2.25-2.5,							
AM-BH26 2.5-2.75,	AM-BH26 2.75-3,							
AM-BH18 0-0.25,	AM-BH18 0.25-0.5,							
AM-BH18 0.5-0.75,	AM-BH18 0.75-1,							
AM-BH18 1-1.25,	AM-BH18 1.25-1.5,							
AM-BH18 1.5-1.75,	AM-BH18 1.75-2,							
AM-BH18 2-2.25,	AM-BH18 2.25-2.5,							
AM-BH18 2.5-2.75,	AM-BH18 2.75-3,							
AM-BH24 0-0.25,	AM-BH24 0.25-0.5,							
AM-BH24 0.5-0.75,	AM-BH24 0.75-1,							
AM-BH24 1-1.25,	AM-BH24 1.25-1.5,							
AM-BH24 1.5-1.75,	AM-BH24 1.75-2,							
AM-BH24 2-2.25,	AM-BH24 2.25-2.5,							
AM-BH24 2.5-2.75,	AM-BH24 2.75-3,							
AM-BH10 0-0.25,	AM-BH10 0.25-0.5,							
AM-BH10 0.5-0.75,	AM-BH10 0.75-1,							
AM-BH10 1-1.25,	AM-BH10 1.25-1.5,							
AM-BH10 1.5-1.75,	AM-BH10 1.75-2,							
AM-BH10 2-2.25,	AM-BH10 2.25-2.5,							
AM-BH10 2.5-2.75,	AM-BH10 2.75-3							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis - Continued								
Snap Lock Bag - frozen (EA037)								
AM-BH29 0-0.25,	AM-BH29 0.25-0.5,	**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓
AM-BH29 0.5-0.75,	AM-BH29 0.75-1,							
AM-BH29 1-1.25,	AM-BH29 1.25-1.5,							
AM-BH29 1.5-1.75,	AM-BH29 1.75-2,							
AM-BH29 2-2.25,	AM-BH29 2.25-2.5,							
AM-BH29 2.5-2.75,	AM-BH29 2.75-3							
Snap Lock Bag - frozen (EA037)								
AM-BH32 0-0.25,	AM-BH32 0.25-0.5,	**10-Oct-2016**	**18-Oct-2016**	08-Apr-2017	✓	**18-Oct-2016**	08-Apr-2017	✓
AM-BH32 0.5-0.75,	AM-BH32 0.75-1,							
AM-BH32 1-1.25,	AM-BH32 1.25-1.5,							
AM-BH32 1.5-1.75,	AM-BH32 1.75-2,							
AM-BH32 2-2.25,	AM-BH32 2.25-2.5,							
AM-BH32 2.5-2.75,	AM-BH32 2.75-3							
EA055: Moisture Content								
Snap Lock Bag - frozen (EA055-103)								
AM-BH26 2.75-3,	AM-BH18 1.75-2,	**06-Oct-2016**	**----**	----	----	**20-Oct-2016**	20-Oct-2016	✓
AM-BH24 2.75-3,	AM-BH10 1.75-2							
Snap Lock Bag - frozen (EA055-103)								
AM-BH29 1.75-2		**07-Oct-2016**	**----**	----	----	**20-Oct-2016**	21-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103)								
AM-BH32 2.75-3		**10-Oct-2016**	**----**	----	----	**20-Oct-2016**	24-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**----**	----	----	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH29 0.25-0.5,	AM-BH29 0-0.1	**07-Oct-2016**	**----**	----	----	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**----**	----	----	**18-Oct-2016**	24-Oct-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	04-Apr-2017	✓	**18-Oct-2016**	04-Apr-2017	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH29 0.25-0.5,	AM-BH29 0-0.1	**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	08-Apr-2017	✓	**18-Oct-2016**	08-Apr-2017	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020R-T)								
AM-BH29 0-0.1		**07-Oct-2016**	**18-Oct-2016**	05-Apr-2017	✓	**18-Oct-2016**	05-Apr-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	03-Nov-2016	✓	**19-Oct-2016**	03-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T) AM-BH29 0.25-0.5, AM-BH29 0-0.1	**07-Oct-2016**	**18-Oct-2016**	04-Nov-2016	✓	**19-Oct-2016**	04-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	07-Nov-2016	✓	**19-Oct-2016**	07-Nov-2016	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup							
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup							
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH26 0.25-0.5, AM-BH18 0.25-0.5, AM-BH24 0.25-0.5, AM-BH10 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH29 0.25-0.5	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) AM-BH32 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH26 0.25-0.5,	AM-BH18 0.25-0.5,	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**18-Oct-2016**	20-Oct-2016	✓
AM-BH24 0.25-0.5,	AM-BH10 0.25-0.5							
Soil Glass Jar - Unpreserved (EP080)								
AM-BH29 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH32 0.25-0.5		**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**18-Oct-2016**	24-Oct-2016	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
AM-BH26 0.25-0.5,	AM-BH26 2.75-3,	**06-Oct-2016**	**20-Oct-2016**	04-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
AM-BH18 0.25-0.5,	AM-BH18 1.75-2,							
AM-BH24 0.25-0.5,	AM-BH24 2.75-3,							
AM-BH10 0.25-0.5,	AM-BH10 1.75-2							
HDPE Soil Jar (EP231X)								
AM-BH29 0.25-0.5,	AM-BH29 1.75-2	**07-Oct-2016**	**20-Oct-2016**	05-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓
HDPE Soil Jar (EP231X)								
AM-BH32 0.25-0.5,	AM-BH32 2.75-3	**10-Oct-2016**	**20-Oct-2016**	08-Apr-2017	✓	**20-Oct-2016**	29-Nov-2016	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	8	72	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite R	EG020R-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020. Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

Preparation Methods	Method	Matrix	Method Descriptions
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre:	scurti@golder.com.au

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
1	AM-BH26	0	0.25	soil	6/10/2016		bag		1	N		X	X						
2	AM-BH26	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X			
3	AM-BH26	0.5	0.75	soil	6/10/2016		bag		1	N		X	X						
4	AM-BH26	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X						
5	AM-BH26	1	1.25	soil	6/10/2016		bag		1	N		X	X						
6	AM-BH26	1.25	1.5	soil	6/10/2016		bag		1	N		X	X						
7	AM-BH26	1.5	1.75	soil	6/10/2016		bag		1	N		X	X						
8	AM-BH26	1.75	2	soil	6/10/2016		bag+2 jars		3	N		X	X						
9	AM-BH26	2	2.25	soil	6/10/2016		bag		1	N		X	X						
10	AM-BH26	2.25	2.5	soil	6/10/2016		bag		1	N		X	X						
11	AM-BH26	2.5	2.75	soil	6/10/2016		bag		1	N		X	X						
12	AM-BH26	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			X			
13	AM-BH26	0	0.1	soil	6/10/2016		jar		1	N							X	X	X

Environmental Division
Brisbane
Work Order Reference
EB1624693

Telephone : + 61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Container		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project Number:	1538021	Quote/Order No.:	EN/002/15
Project Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400

Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
14	AM-BH18	0	0.25	soil	6/10/2016		bag		1	N		X	X			
15	AM-BH18	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
16	AM-BH18	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
17	AM-BH18	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
18	AM-BH18	1	1.25	soil	6/10/2016		bag		1	N		X	X			
19	AM-BH18	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
20	AM-BH18	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
21	AM-BH18	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			X
22	AM-BH18	2	2.25	soil	6/10/2016		bag		1	N		X	X			
23	AM-BH18	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
24	AM-BH18	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
25	AM-BH18	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analyzing Laboratory

LAB BATCH NUMBER

Security Seal: Chilled: Bill to:

Suitable Containers: Frozen: Address:

Condition: Ambient:

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project Number:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
26	AM-BH24	0	0.25	soil	6/10/2016		bag		1	N		X	X			
27	AM-BH24	0.25	0.5	soil	6/10/2016		bag+2jars		3	N		X	X	X	X	X
28	AM-BH24	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
29	AM-BH24	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
30	AM-BH24	1	1.25	soil	6/10/2016		bag		1	N		X	X			
31	AM-BH24	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
32	AM-BH24	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
33	AM-BH24	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
34	AM-BH24	2	2.25	soil	6/10/2016		bag		1	N		X	X			
35	AM-BH24	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
36	AM-BH24	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
37	AM-BH24	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			
38	AM-BH24	1.1	1.2	soil	6/10/2016		jar		1	N	X					

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14/10		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

Security Seal		Chilled	LAB BATCH NUMBER		
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Location:	1538021	Quote/Order No:	EN/002/15
Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Golder Associates
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
39	AM-BH10	0	0.25	soil	6/10/2016		bag	1	N		X	X			
40	AM-BH10	0.25	0.5	soil	6/10/2016		bag+2jar	3	N		X	X	X	X	X
41	AM-BH10	0.5	0.75	soil	6/10/2016		bag	1	N		X	X			
42	AM-BH10	0.75	1	soil	6/10/2016		bag+jar	2	N		X	X			
43	AM-BH10	1	1.25	soil	6/10/2016		bag	1	N		X	X			
44	AM-BH10	1.25	1.5	soil	6/10/2016		bag	1	N		X	X			
45	AM-BH10	1.5	1.75	soil	6/10/2016		bag	1	N		X	X			
46	AM-BH10	1.75	2	soil	6/10/2016		bag+jar	2	N		X	X			X
47	AM-BH10	2	2.25	soil	6/10/2016		bag	1	N		X	X			
48	AM-BH10	2.25	2.5	soil	6/10/2016		bag	1	N		X	X			
49	AM-BH10	2.5	2.75	soil	6/10/2016		bag	1	N		X	X			
50	AM-BH10	2.75	3	soil	6/10/2016		bag+jar	2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14/10		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Sealing Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Job Number:	1538021	Quote/Order No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Golder Associates

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
51	AM-BH32	0	0.25	soil	10/10/2016		bag		1	N		X	X			
52	AM-BH32	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
53	AM-BH32	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
54	AM-BH32	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			
55	AM-BH32	1	1.25	soil	10/10/2016		bag		1	N		X	X			
56	AM-BH32	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
57	AM-BH32	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
58	AM-BH32	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			
59	AM-BH32	2	2.25	soil	10/10/2016		bag		1	N		X	X			
60	AM-BH32	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
61	AM-BH32	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
62	AM-BH32	2.75	3	soil	10/10/2016		bag+jar		2	N		X	X			X

SAMPLE MATRIX = Soil/Sediment/Fill/Other

SAMPLE TYPE = Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		Chilled	LAB BATCH NUMBER		
Suitable Containers		Frozen	Bill to:		
Cool Box		Ambient	Address		

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FREEZE OR BAKE ENTIRE SAMPLE

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Job Number:	1538021	Quote/Order No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
63 AM-BH29	0	0.25	soil	7/10/2016		bag		1	N		X	X						
64 AM-BH29	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
65 AM-BH29	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
66 AM-BH29	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
67 AM-BH29	1	1.25	soil	7/10/2016		bag		1	N		X	X						
68 AM-BH29	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
69 AM-BH29	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
70 AM-BH29	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X			X			
71 AM-BH29	2	2.25	soil	7/10/2016		bag		1	N		X	X						
72 AM-BH29	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
73 AM-BH29	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
74 AM-BH29	2.75	3	soil	7/10/2016		bag+jar		2	N		X	X						
75 AM-BH29	0	0.1	soil	7/10/2016		jar		1	N							X	X	X

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER		
RECEIVED BY	CHRES	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

TO BE Filled Out By Analytical Laboratory

Security Seal		Chilled		LAB BATCH NUMBER	
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

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DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STA[illegible] ON RECEIPT OF SAMPLES.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1624693**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 4
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 14-Oct-2016 4:00 PM	Issue Date	: 17-Oct-2016
Client Requested Due Date	: 21-Oct-2016	Scheduled Reporting Date	: **21-Oct-2016**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 0.1°C, 0.4°C, 1.2°C
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 74 / 73

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please be advised that sample "AM-BH26 0-0.1" was not received at the laboratory (denoted SNR on the scanned COC).**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH
EB1624693-001	[06-Oct-2016]	AM-BH26 0-0.25		✓					
EB1624693-002	[06-Oct-2016]	AM-BH26 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-003	[06-Oct-2016]	AM-BH26 0.5-0.75		✓					
EB1624693-004	[06-Oct-2016]	AM-BH26 0.75-1		✓					
EB1624693-005	[06-Oct-2016]	AM-BH26 1-1.25		✓					
EB1624693-006	[06-Oct-2016]	AM-BH26 1.25-1.5		✓					
EB1624693-007	[06-Oct-2016]	AM-BH26 1.5-1.75		✓					
EB1624693-008	[06-Oct-2016]	AM-BH26 1.75-2		✓					
EB1624693-009	[06-Oct-2016]	AM-BH26 2-2.25		✓					
EB1624693-010	[06-Oct-2016]	AM-BH26 2.25-2.5		✓					
EB1624693-011	[06-Oct-2016]	AM-BH26 2.5-2.75		✓					
EB1624693-012	[06-Oct-2016]	AM-BH26 2.75-3		✓	✓		✓		
EB1624693-014	[06-Oct-2016]	AM-BH18 0-0.25		✓					
EB1624693-015	[06-Oct-2016]	AM-BH18 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-016	[06-Oct-2016]	AM-BH18 0.5-0.75		✓					
EB1624693-017	[06-Oct-2016]	AM-BH18 0.75-1		✓					
EB1624693-018	[06-Oct-2016]	AM-BH18 1-1.25		✓					
EB1624693-019	[06-Oct-2016]	AM-BH18 1.25-1.5		✓					
EB1624693-020	[06-Oct-2016]	AM-BH18 1.5-1.75		✓					
EB1624693-021	[06-Oct-2016]	AM-BH18 1.75-2		✓	✓		✓		
EB1624693-022	[06-Oct-2016]	AM-BH18 2-2.25		✓					
EB1624693-023	[06-Oct-2016]	AM-BH18 2.25-2.5		✓					
EB1624693-024	[06-Oct-2016]	AM-BH18 2.5-2.75		✓					
EB1624693-025	[06-Oct-2016]	AM-BH18 2.75-3		✓					
EB1624693-026	[06-Oct-2016]	AM-BH24 0-0.25		✓					
EB1624693-027	[06-Oct-2016]	AM-BH24 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-028	[06-Oct-2016]	AM-BH24 0.5-0.75		✓					
EB1624693-029	[06-Oct-2016]	AM-BH24 0.75-1		✓					
EB1624693-030	[06-Oct-2016]	AM-BH24 1-1.25		✓					
EB1624693-031	[06-Oct-2016]	AM-BH24 1.25-1.5		✓					
EB1624693-032	[06-Oct-2016]	AM-BH24 1.5-1.75		✓					
EB1624693-033	[06-Oct-2016]	AM-BH24 1.75-2		✓					
EB1624693-034	[06-Oct-2016]	AM-BH24 2-2.25		✓					
EB1624693-035	[06-Oct-2016]	AM-BH24 2.25-2.5		✓					
EB1624693-036	[06-Oct-2016]	AM-BH24 2.5-2.75		✓					

			(On Hold) SOIL No analysis requested	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH
EB1624693-037	[06-Oct-2016]	AM-BH24 2.75-3		✓	✓		✓		
EB1624693-038	[06-Oct-2016]	AM-BH24 1.1-1.2	✓						
EB1624693-039	[06-Oct-2016]	AM-BH10 0-0.25		✓					
EB1624693-040	[06-Oct-2016]	AM-BH10 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-041	[06-Oct-2016]	AM-BH10 0.5-0.75		✓					
EB1624693-042	[06-Oct-2016]	AM-BH10 0.75-1		✓					
EB1624693-043	[06-Oct-2016]	AM-BH10 1-1.25		✓					
EB1624693-044	[06-Oct-2016]	AM-BH10 1.25-1.5		✓					
EB1624693-045	[06-Oct-2016]	AM-BH10 1.5-1.75		✓					
EB1624693-046	[06-Oct-2016]	AM-BH10 1.75-2		✓	✓		✓		
EB1624693-047	[06-Oct-2016]	AM-BH10 2-2.25		✓					
EB1624693-048	[06-Oct-2016]	AM-BH10 2.25-2.5		✓					
EB1624693-049	[06-Oct-2016]	AM-BH10 2.5-2.75		✓					
EB1624693-050	[06-Oct-2016]	AM-BH10 2.75-3		✓					
EB1624693-051	[10-Oct-2016]	AM-BH32 0-0.25		✓					
EB1624693-052	[10-Oct-2016]	AM-BH32 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-053	[10-Oct-2016]	AM-BH32 0.5-0.75		✓					
EB1624693-054	[10-Oct-2016]	AM-BH32 0.75-1		✓					
EB1624693-055	[10-Oct-2016]	AM-BH32 1-1.25		✓					
EB1624693-056	[10-Oct-2016]	AM-BH32 1.25-1.5		✓					
EB1624693-057	[10-Oct-2016]	AM-BH32 1.5-1.75		✓					
EB1624693-058	[10-Oct-2016]	AM-BH32 1.75-2		✓					
EB1624693-059	[10-Oct-2016]	AM-BH32 2-2.25		✓					
EB1624693-060	[10-Oct-2016]	AM-BH32 2.25-2.5		✓					
EB1624693-061	[10-Oct-2016]	AM-BH32 2.5-2.75		✓					
EB1624693-062	[10-Oct-2016]	AM-BH32 2.75-3		✓	✓		✓		
EB1624693-063	[07-Oct-2016]	AM-BH29 0-0.25		✓					
EB1624693-064	[07-Oct-2016]	AM-BH29 0.25-0.5		✓	✓	✓	✓		✓
EB1624693-065	[07-Oct-2016]	AM-BH29 0.5-0.75		✓					
EB1624693-066	[07-Oct-2016]	AM-BH29 0.75-1		✓					
EB1624693-067	[07-Oct-2016]	AM-BH29 1-1.25		✓					
EB1624693-068	[07-Oct-2016]	AM-BH29 1.25-1.5		✓					
EB1624693-069	[07-Oct-2016]	AM-BH29 1.5-1.75		✓					
EB1624693-070	[07-Oct-2016]	AM-BH29 1.75-2		✓	✓		✓		
EB1624693-071	[07-Oct-2016]	AM-BH29 2-2.25		✓					
EB1624693-072	[07-Oct-2016]	AM-BH29 2.25-2.5		✓					
EB1624693-073	[07-Oct-2016]	AM-BH29 2.5-2.75		✓					
EB1624693-074	[07-Oct-2016]	AM-BH29 2.75-3		✓					
EB1624693-075	[07-Oct-2016]	AM-BH29 0-0.1			✓			✓	

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG020R-T Total Metals by ICPMS - Suite R
EB1624693-075	[07-Oct-2016]	AM-BH29 0-0.1	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au

SERENA CURTI

- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1624749**	Page	: 1 of 105
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016 16:00
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 25-Oct-2016 13:16
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 90		
No. of samples analysed	: 85		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Matt Frost	Senior Organic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG005T (Total Metals): Sample EB1624685-033 shows poor matrix spike recovery due to sample heterogeneity. Confirmed by visual inspection.
- EG035T (Total Mercury): Sample EB1624685-033 shows poor spike recovery due to sample heterogeneity. Confirmed by visual inspection
- EP068 Pesticides: Sample 'AM-BH14 0.25-0.5' shows poor matrix spike recovery for 4,4/ due to matrix interference. Confirmed by re-extraction and re-analysis.
- EP068 Pesticides: High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- EP075(SIM): High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- ASS: EA037 (Rapid Field and F(ox) screening): pH F(ox) Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Strong; 4 - Extreme
- EA037 ASS Field Screening: NATA accreditation does not cover performance of this service.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.6	7.6	6.9	7.1
ø pH (Fox)	----	0.1	pH Unit	5.2	5.6	5.7	5.2	4.4
ø Reaction Rate	----	1	-	1	2	2	2	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	9.8	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	7	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	9	----	----	----
Copper	7440-50-8	5	mg/kg	----	23	----	----	----
Lead	7439-92-1	5	mg/kg	----	14	----	----	----
Nickel	7440-02-0	2	mg/kg	----	9	----	----	----
Zinc	7440-66-6	5	mg/kg	----	30	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 0-0.25	AM-BH13 0.25-0.5	AM-BH13 0.5-0.75	AM-BH13 0.75-1	AM-BH13 1-1.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-001	EB1624749-002	EB1624749-003	EB1624749-004	EB1624749-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	114	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	102	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	122	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	118	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	100	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	121	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	113	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	132	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	99.4	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	84.9	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	88.2	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	93.7	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.4	7.8	5.9	5.0	5.7
ø pH (Fox)	----	0.1	pH Unit	4.2	4.4	3.0	3.4	3.3
ø Reaction Rate	----	1	-	3	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 1.25-1.5	AM-BH13 1.5-1.75	AM-BH13 1.75-2	AM-BH13 2-2.25	AM-BH13 2.25-2.5
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-006	EB1624749-007	EB1624749-008	EB1624749-009	EB1624749-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.7	6.5	7.0	7.8	5.9
ø pH (Fox)	----	0.1	pH Unit	3.4	4.8	4.7	6.0	2.7
ø Reaction Rate	----	1	-	2	2	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.2	----	11.2	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	8	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	21	----
Copper	7440-50-8	5	mg/kg	----	----	----	24	----
Lead	7439-92-1	5	mg/kg	----	----	----	13	----
Nickel	7440-02-0	2	mg/kg	----	----	----	14	----
Zinc	7440-66-6	5	mg/kg	----	----	----	40	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH13 2.5-2.75	AM-BH13 2.75-3	AM-BH14 0-0.25	AM-BH14 0.25-0.5	AM-BH14 0.5-0.75
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-011	EB1624749-012	EB1624749-013	EB1624749-014	EB1624749-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	**0.0003**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	**119**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	**112**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	**116**	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	**109**	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	**95.1**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	**116**	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	**108**	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	**132**	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	**94.1**	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	**79.3**	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	**92.0**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	**96.0**	----	**104**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.3	5.2	8.0	5.5	5.7
ø pH (Fox)	----	0.1	pH Unit	2.4	2.5	3.2	2.9	3.0
ø Reaction Rate	----	1	-	4	4	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	6.8	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 0.75-1	AM-BH14 1-1.25	AM-BH14 1.25-1.5	AM-BH14 1.5-1.75	AM-BH14 1.75-2
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-016	EB1624749-017	EB1624749-018	EB1624749-019	EB1624749-020
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**90.5**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.8	7.2	7.2	7.3	7.0
ø pH (Fox)	----	0.1	pH Unit	5.0	5.6	5.7	5.7	1.8
ø Reaction Rate	----	1	-	2	2	2	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH14 2-2.25	AM-BH14 2.25-2.5	AM-BH14 2.5-2.75	AM-BH14 2.75-3	AM-BH15 0-0.25
			Client sampling date / time	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[06-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-021	EB1624749-022	EB1624749-023	EB1624749-024	EB1624749-025
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.0	6.5	7.2	7.0	7.3
ø pH (Fox)	----	0.1	pH Unit	5.4	4.4	5.0	4.8	4.8
ø Reaction Rate	----	1	-	3	2	3	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	23.9	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	14	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	41	----	----	----	----
Copper	7440-50-8	5	mg/kg	22	----	----	----	----
Lead	7439-92-1	5	mg/kg	10	----	----	----	----
Nickel	7440-02-0	2	mg/kg	39	----	----	----	----
Zinc	7440-66-6	5	mg/kg	90	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 0.25-0.5	AM-BH15 0.5-0.75	AM-BH15 0.75-1	AM-BH15 1-1.25	AM-BH15 1.25-1.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-026	EB1624749-027	EB1624749-028	EB1624749-029	EB1624749-030
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**113**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**106**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**108**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**105**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**102**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**103**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**110**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**123**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**99.0**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**89.6**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**97.4**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**96.0**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.1	6.9	6.9	7.0	7.0
ø pH (Fox)	----	0.1	pH Unit	4.6	4.4	4.2	4.4	2.5
ø Reaction Rate	----	1	-	3	3	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	25.4	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 1.5-1.75	AM-BH15 1.75-2	AM-BH15 2-2.25	AM-BH15 2.25-2.5	AM-BH15 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-031	EB1624749-032	EB1624749-033	EB1624749-034	EB1624749-035
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	94.3	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.3	----	----	7.2	6.3
ø pH (Fox)	----	0.1	pH Unit	2.5	----	----	3.1	4.3
ø Reaction Rate	----	1	-	4	----	----	3	2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	16.8	23.4	----	24.2
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	8	13	----	<5
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg	----	46	39	----	55
Copper	7440-50-8	5	mg/kg	----	34	31	----	20
Lead	7439-92-1	5	mg/kg	----	10	17	----	6
Nickel	7440-02-0	2	mg/kg	----	52	59	----	18
Zinc	7440-66-6	5	mg/kg	----	56	236	----	33
Titanium	7440-32-6	10	mg/kg	----	360	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	1.4	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	<0.05	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	<0.2	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Diazinon	333-41-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	<0.05	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	<0.2	----	<0.2
Malathion	121-75-5	0.05	mg/kg	----	----	<0.05	----	<0.05
Fenthion	55-38-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Parathion	56-38-2	0.2	mg/kg	----	----	<0.2	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	<0.05	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	----	----	<0.05	----	<0.05
Ethion	563-12-2	0.05	mg/kg	----	----	<0.05	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	----	----	<0.05	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	<0.05	----	<0.05
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**0.6**	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.2**	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	<10
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	<0.001	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	<0.0002	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	<0.0005	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH15 2.75-3	AM-BH15 0-0.1	QAQC005	AM-BH16 0-0.25	AM-BH16 0.25-0.5
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-036	EB1624749-037	EB1624749-038	EB1624749-041	EB1624749-042
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	<0.0005	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	**0.0004**	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	**112**	----	**116**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	**101**	----	**106**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	**109**	----	**119**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	**103**	----	**110**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	**97.8**	----	**106**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	**104**	----	**103**
Anthracene-d10	1719-06-8	0.5	%	----	----	**104**	----	**113**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	**116**	----	**125**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	**98.0**	----	**110**
Toluene-D8	2037-26-5	0.2	%	----	----	**86.8**	----	**90.0**
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	**95.4**	----	**101**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	**101**	----	**92.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	4.5	5.3	5.9	6.4	6.7
ø pH (Fox)	----	0.1	pH Unit	2.6	3.2	3.8	3.4	3.5
ø Reaction Rate	----	1	-	2	2	2	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0.5-0.75	AM-BH16 0.75-1	AM-BH16 1-1.25	AM-BH16 1.25-1.5	AM-BH16 1.5-1.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-043	EB1624749-044	EB1624749-045	EB1624749-046	EB1624749-047
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.3	6.2	6.5	6.4	7.1
ø pH (Fox)	----	0.1	pH Unit	3.7	3.6	3.3	1.7	2.2
ø Reaction Rate	----	1	-	3	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	23.9
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 1.75-2	AM-BH16 2-2.25	AM-BH16 2.25-2.5	AM-BH16 2.5-2.75	AM-BH16 2.75-3
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-048	EB1624749-049	EB1624749-050	EB1624749-051	EB1624749-052
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	91.6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	----	----	6.7	4.3	5.9
ø pH (Fox)	----	0.1	pH Unit	----	----	3.8	4.6	4.0
ø Reaction Rate	----	1	-	----	----	3	2	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	19.1	23.7	----	11.6	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	11	8	----	10	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	----
Chromium	7440-47-3	2	mg/kg	37	54	----	54	----
Copper	7440-50-8	5	mg/kg	25	30	----	41	----
Lead	7439-92-1	5	mg/kg	17	13	----	15	----
Nickel	7440-02-0	2	mg/kg	18	33	----	31	----
Zinc	7440-66-6	5	mg/kg	65	42	----	44	----
Titanium	7440-32-6	10	mg/kg	340	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	3.0	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	**0.0004**	----	**0.0005**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	**0.0004**	----	**0.0020**	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	<0.001	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	<0.0002	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	<0.0005	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH16 0-0.1	QAQC001	AM-BH25 0-0.25	AM-BH25 0.25-0.5	AM-BH25 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-053	EB1624749-054	EB1624749-057	EB1624749-058	EB1624749-059
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	<0.0005	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	0.0008	----	0.0025	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	0.0008	----	0.0025	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	0.0008	----	0.0025	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	115	----	108	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	103	----	98.5	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	119	----	117	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	109	----	108	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	102	----	94.1	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	105	----	116	----
Anthracene-d10	1719-06-8	0.5	%	----	113	----	117	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	132	----	128	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	104	----	93.1	----
Toluene-D8	2037-26-5	0.2	%	----	89.4	----	83.0	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	97.6	----	83.7	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	95.2	----	93.4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.9	6.0	6.1	4.7	5.9
ø pH (Fox)	----	0.1	pH Unit	3.2	3.5	4.1	2.9	4.5
ø Reaction Rate	----	1	-	3	3	3	2	1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 1.5-1.75	AM-BH25 1.75-2	AM-BH25 2-2.25	AM-BH25 2.25-2.5	AM-BH25 2.5-2.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]	[07-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-060	EB1624749-061	EB1624749-062	EB1624749-063	EB1624749-064
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	6.6	----	4.5	3.9	4.2
ø pH (Fox)	----	0.1	pH Unit	5.4	----	2.8	2.2	2.5
ø Reaction Rate	----	1	-	2	----	3	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	25.2	28.6	----	15.1	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	8	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	39	----
Copper	7440-50-8	5	mg/kg	----	----	----	16	----
Lead	7439-92-1	5	mg/kg	----	----	----	12	----
Nickel	7440-02-0	2	mg/kg	----	----	----	24	----
Zinc	7440-66-6	5	mg/kg	----	----	----	54	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	<0.001	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	<0.0005	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH25 2.75-3	AM-BH25 0.5-0.6	AM-BH30 0-0.25	AM-BH30 0.25-0.5	AM-BH30 0.5-0.75
			Client sampling date / time	[07-Oct-2016]	[07-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-065	EB1624749-066	EB1624749-067	EB1624749-068	EB1624749-069
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	<0.0005	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	<0.0002	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	104	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	98.4	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	113	----	104	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	102	----	97.1	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	106	----	91.9	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	100	----	110	----
Anthracene-d10	1719-06-8	0.5	%	----	111	----	115	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	116	----	122	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	88.7	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	77.2	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	85.4	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	91.5	----	----	86.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	5.4	6.4	6.8	7.1	7.2
ø pH (Fox)	----	0.1	pH Unit	3.8	4.2	4.0	1.8	1.8
ø Reaction Rate	----	1	-	2	3	3	3	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	34.4	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 0.75-1	AM-BH30 1-1.25	AM-BH30 1.25-1.5	AM-BH30 1.5-1.75	AM-BH30 1.75-2
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-070	EB1624749-071	EB1624749-072	EB1624749-073	EB1624749-074
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**86.4**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	8.0	8.1	8.2	5.2	4.2
ø pH (Fox)	----	0.1	pH Unit	2.4	2.0	2.0	3.0	2.4
ø Reaction Rate	----	1	-	4	4	4	3	3
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	17.5
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	19
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	<1
Chromium	7440-47-3	2	mg/kg	----	----	----	----	41
Copper	7440-50-8	5	mg/kg	----	----	----	----	20
Lead	7439-92-1	5	mg/kg	----	----	----	----	13
Nickel	7440-02-0	2	mg/kg	----	----	----	----	41
Zinc	7440-66-6	5	mg/kg	----	----	----	----	63
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	<0.5
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	<0.2
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	<1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	**0.0005**
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH30 2-2.25	AM-BH30 2.25-2.5	AM-BH30 2.5-2.75	AM-BH31 0-0.25	AM-BH31 0.25-0.5
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-075	EB1624749-076	EB1624749-077	EB1624749-079	EB1624749-080
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	**0.0005**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	<0.0002
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	**110**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	**100**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	**108**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	**99.3**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	**94.6**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	**113**
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	**118**
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	**126**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	**100**
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	**79.5**
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	**94.5**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	**95.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	3.9	5.7	5.1	5.8	6.5
ø pH (Fox)	----	0.1	pH Unit	2.2	3.9	2.5	1.8	1.9
ø Reaction Rate	----	1	-	2	3	3	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 0.5-0.75	AM-BH31 0.75-1	AM-BH31 1-1.25	AM-BH31 1.25-1.5	AM-BH31 1.5-1.75
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-081	EB1624749-082	EB1624749-083	EB1624749-084	EB1624749-085
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	----	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	----	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EA037: Ass Field Screening Analysis								
ø pH (F)	----	0.1	pH Unit	7.0	7.1	7.4	7.8	7.8
ø pH (Fox)	----	0.1	pH Unit	1.8	1.7	1.7	2.0	1.7
ø Reaction Rate	----	1	-	4	4	4	4	4
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	36.0	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	----	----	----
Titanium	7440-32-6	10	mg/kg	----	----	----	----	----
EG020T: Total Metals by ICP-MS								
Zirconium	7440-67-7	0.5	mg/kg	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup - Continued								
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	AM-BH31 1.75-2	AM-BH31 2-2.25	AM-BH31 2.25-2.5	AM-BH31 2.5-2.75	AM-BH31 2.75-3
			Client sampling date / time	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]	[10-Oct-2016]
Compound	CAS Number	LOR	Unit	EB1624749-086	EB1624749-087	EB1624749-088	EB1624749-089	EB1624749-090
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**82.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	138
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	23	135
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	155
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	157
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1624749**	Page	: 1 of 19
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 18-Oct-2016
C-O-C number	: ----	Issue Date	: 25-Oct-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 90		
No. of samples analysed	: 85		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Ben Felgendrejeris		Brisbane Acid Sulphate Soils, Stafford, QLD
Lana Nguyen	Senior LCMS Chemist	Sydney Organics, Smithfield, NSW
Matt Frost	Senior Organic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA037: Ass Field Screening Analysis (QC Lot: 621294)									
EB1624749-001	AM-BH13 0-0.25	EA037: pH (F)	----	0.1	pH Unit	7.4	7.4	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.2	5.1	1.94	0% - 20%
EB1624749-011	AM-BH13 2.5-2.75	EA037: pH (F)	----	0.1	pH Unit	5.7	5.5	3.57	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.4	3.5	2.90	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621295)									
EB1624749-021	AM-BH14 2-2.25	EA037: pH (F)	----	0.1	pH Unit	6.8	7.0	2.90	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.0	4.8	4.08	0% - 20%
EB1624749-031	AM-BH15 1.5-1.75	EA037: pH (F)	----	0.1	pH Unit	7.1	7.0	1.42	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.6	4.5	2.20	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621296)									
EB1624749-045	AM-BH16 1-1.25	EA037: pH (F)	----	0.1	pH Unit	5.9	5.8	1.71	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.8	3.8	0.00	0% - 20%
EB1624749-059	AM-BH25 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	5.9	6.0	1.68	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.0	3.9	2.53	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 621297)									
EB1624749-070	AM-BH30 0.75-1	EA037: pH (F)	----	0.1	pH Unit	5.4	5.5	1.83	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.8	3.7	2.67	0% - 20%
EB1624749-081	AM-BH31 0.5-0.75	EA037: pH (F)	----	0.1	pH Unit	3.9	3.9	0.00	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	2.2	2.3	4.44	0% - 20%
EA055: Moisture Content (QC Lot: 620751)									
EB1624685-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	16.4	16.6	1.12	0% - 50%
EB1624685-023	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	3.8	3.9	0.00	No Limit
EA055: Moisture Content (QC Lot: 620757)									
EB1624749-002	AM-BH13 0.25-0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	9.8	9.6	2.30	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 620766)									
EB1624685-005	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	8.3	8.2	0.00	No Limit
EA055: Moisture Content (QC Lot: 624690)									
EB1623981-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	4.8	4.6	4.61	No Limit
EB1623981-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	25.5	26.2	2.67	0% - 20%
EA055: Moisture Content (QC Lot: 624691)									
EB1624749-052	AM-BH16 2.75-3	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	23.9	23.3	2.31	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 620763)									
EB1624685-032	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	25	25	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	12	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	54	53	0.00	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	31	31	0.00	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	11	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	41	40	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	16	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	44	44	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 620765)									
EB1624749-037	AM-BH15 0-0.1	EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	1.4	1.7	13.2	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 620764)									
EB1624685-032	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620748)									
EB1624685-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	0.08	0.07	14.7	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620748) - continued									
EB1624685-001	Anonymous	EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	0.08	0.07	13.3	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620755)									
EB1624749-002	AM-BH13 0.25-0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 620755) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620748)									
EB1624685-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620755)									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 620755) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 620754)									
EB1624749-002	AM-BH13 0.25-0.5	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 620754)									
EB1624749-002	AM-BH13 0.25-0.5	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620746)									
EB1624685-023	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EB1624685-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620746) - continued									
EB1624685-001	Anonymous	EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 620753)									
EB1624749-002	AM-BH13 0.25-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620747)									
EB1624685-033	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	100	120	15.1	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1624685-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EB1624685-033	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620747)									
EB1624685-033	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	160	190	14.4	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EB1624685-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EB1624685-033	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 620750)									
EB1624685-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EB1624685-033	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 620756)									
EB1624749-002	AM-BH13 0.25-0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 624743) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0005	0.0006	18.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0020	0.0022	12.4	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 624743) - continued									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 624743)									
EB1624749-002	AM-BH13 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EB1624749-058	AM-BH25 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620763)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	118.9 mg/kg	93.9	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.87125 mg/kg	102	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	22.7 mg/kg	95.9	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	55 mg/kg	105	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	72.1 mg/kg	102	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	16.6 mg/kg	109	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	182.3 mg/kg	104	87	127
EG020T: Total Metals by ICP-MS (QCLot: 620765)								
EG020R-T: Zirconium	7440-67-7	0.5	mg/kg	<0.5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620764)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	100	78	122
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	101	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	85.1	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.8	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	103	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	102	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	106	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	107	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	100	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	110	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	97.5	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	80.2	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.4	55	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748) - continued								
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	98.1	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 620755)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	54	121
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	# 114	54	112
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	99.7	49	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	55	129
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.1	61	122
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	119	65	130
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	108	70	130
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	116	58	118
EP068: Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	115	56	119
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	103	51	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	113	57	118
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	106	67	129
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	118	62	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	113	60	137
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	61	122
EP068: Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	60	123
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	52	125
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.6	55	125
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	107	80	142
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	121	55	129
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	111	53	136
EP068: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	99.2	41	114
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	65.7	25	120
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	113	35	135
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	94.8	44	131
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.7	70	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748) - continued								
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	109	70	130
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	80.0	60	122
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	64	125
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	103	69	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.9	66	120
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	102	57	118
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	121	70	130
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	117	62	127
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	106	80	130
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	98.5	55	106
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	101	80	134
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	120	61	123
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	119	57	124
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	46.7	35	127
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620755)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	102	41	114
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	67.2	25	120
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	112	35	135
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	44	131
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	111	70	131
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	107	70	130
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	81.3	60	122
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	105	64	125
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	108	69	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	98.5	66	120
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	102	57	118
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	# 131	70	130
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	123	62	127
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	114	80	130
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	103	55	106
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	107	80	134
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	112	61	123
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	# 126	57	124
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	35.5	35	127
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	61.8	47	112
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	72.0	55	108
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620754)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	65.8	46	115
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	70.9	53	113
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620746)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	101	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	102	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	106	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	104	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	110	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	113	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	112	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	114	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	107	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	110	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	108	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	112	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	85.5	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	91.9	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	88.7	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	106	64	131
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620753)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	111	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	116	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	111	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	112	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	# 122	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	# 127	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	132	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	109	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	# 125	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	110	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	115	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	110	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	113	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	114	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	120	64	131

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620747)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	82.6	79	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	87.4	77	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620750)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	96.3	66	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620756)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	71.8	66	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620747)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	84.9	81	122
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	83.5	74	122
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620750)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	89.8	66	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620756)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	67.4	66	119
EP080: BTEXN (QCLot: 620750)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	90.9	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	97.1	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	92.5	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	94.6	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	98.7	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	101	72	115
EP080: BTEXN (QCLot: 620756)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	86.8	73	105
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.3	73	105
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	89.1	67	104
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	86.8	66	106
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.0	68	105
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	100	72	115
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	54	125

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 624743)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00125 mg/kg	83.2	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.0	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.3	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.4	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.3	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.4	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.6	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 624743)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	103	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.1	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.3	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.6	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.1	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.5	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 624743)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.1	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	90.0	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.4	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	87.6	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 620763)							
EB1624685-033	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	# Not Determined	70	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EG005T: Total Metals by ICP-AES (QCLot: 620763) - continued							
EB1624685-033	Anonymous	EG005T: Cadmium	7440-43-9	25 mg/kg	114	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	# Not Determined	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	# 9.19	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	97.1	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	123	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 620764)							
EB1624685-033	Anonymous	EG035T: Mercury	7439-97-6	2.5 mg/kg	# 139	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620748)							
EB1624685-007	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	97.6	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	90.7	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	97.4	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	104	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	103	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	81.4	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 620755)							
EB1624749-014	AM-BH14 0.25-0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	70.5	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	84.5	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	74.9	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	90.2	70	130
		EP068: Endrin	72-20-8	0.5 mg/kg	94.2	70	130
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	# 57.7	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620748)							
EB1624685-007	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	90.0	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	75.8	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	105	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	111	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	103	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 620755)							
EB1624749-014	AM-BH14 0.25-0.5	EP068: Diazinon	333-41-5	0.5 mg/kg	89.6	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	86.5	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	107	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	95.6	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	93.6	70	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 620754) - continued							
EB1624749-014	AM-BH14 0.25-0.5	EP071SG-S: C10 - C14 Fraction	----	318 mg/kg	62.5	47	130
		EP071SG-S: C15 - C28 Fraction	----	531 mg/kg	68.3	55	130
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 620754)							
EB1624749-014	AM-BH14 0.25-0.5	EP071SG-S: >C10 - C16 Fraction	----	428 mg/kg	64.4	46	130
		EP071SG-S: >C16 - C34 Fraction	----	395 mg/kg	66.8	53	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620746)							
EB1624685-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	101	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	110	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 620753)							
EB1624749-014	AM-BH14 0.25-0.5	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	116	70	130
		EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	124	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620747)							
EB1624685-004	Anonymous	EP071: C10 - C14 Fraction	----	318 mg/kg	82.4	70	130
		EP071: C15 - C28 Fraction	----	531 mg/kg	87.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: C6 - C9 Fraction	----	8 mg/kg	95.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: C6 - C9 Fraction	----	8 mg/kg	78.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620747)							
EB1624685-004	Anonymous	EP071: >C10 - C16 Fraction	----	428 mg/kg	84.2	70	130
		EP071: >C16 - C34 Fraction	----	395 mg/kg	84.9	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	93.8	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	76.0	70	130
EP080: BTEXN (QCLot: 620750)							
EB1624685-004	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	93.3	70	130
		EP080: Toluene	108-88-3	2 mg/kg	91.1	70	130
EP080: BTEXN (QCLot: 620756)							
EB1624749-014	AM-BH14 0.25-0.5	EP080: Benzene	71-43-2	2 mg/kg	80.5	70	130
		EP080: Toluene	108-88-3	2 mg/kg	76.5	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	75.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	77.1	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	72.6	50	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 624743) - continued							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	94.9	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	86.0	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.00125 mg/kg	81.3	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00125 mg/kg	67.8	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	82.2	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	67.8	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	90.2	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	109	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	112	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	102	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	114	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	91.6	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	105	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	94.9	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	99.4	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	89.7	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	89.9	50	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.00312 mg/kg	94.3	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	73.4	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	112	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	109	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 624743)							
EB1624749-002	AM-BH13 0.25-0.5	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	98.6	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	110	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	87.3	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	103	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1624749**	Page	: 1 of 13
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 14-Oct-2016
Site	: Brisbane Airport	Issue Date	: 25-Oct-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 90
Order number	: 1538021	No. of samples analysed	: 85

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	QC-620755-002	----	**Hexachlorobenzene (HCB)**	118-74-1	114 %	54-112%	**Recovery greater than upper control limit**
EP068B: Organophosphorus Pesticides (OP)	QC-620755-002	----	**Pirimphos-ethyl**	23505-41-1	131 %	70-130%	**Recovery greater than upper control limit**
EP068B: Organophosphorus Pesticides (OP)	QC-620755-002	----	**Carbophenothion**	786-19-6	126 %	57-124%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Anthracene**	120-12-7	122 %	72-115%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Fluoranthene**	206-44-0	127 %	70-116%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-620753-002	----	**Chrysene**	218-01-9	125 %	66-119%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Arsenic**	7440-38-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Chromium**	7440-47-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Copper**	7440-50-8	9.19 %	70-130%	**Recovery less than lower data quality objective**
EG005T: Total Metals by ICP-AES	EB1624685--033	Anonymous	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG035T: Total Recoverable Mercury by FIMS	EB1624685--033	Anonymous	**Mercury**	7439-97-6	139 %	70-130%	**Recovery greater than upper data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB1624749--014	AM-BH14 0.25-0.5	**4.4`-DDT**	50-29-3	57.7 %	70-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen (EA037)								
AM-BH13 0-0.25,	AM-BH13 0.25-0.5,	**06-Oct-2016**	**19-Oct-2016**	04-Apr-2017	✓	**19-Oct-2016**	04-Apr-2017	✓
AM-BH13 0.5-0.75,	AM-BH13 0.75-1,							
AM-BH13 1-1.25,	AM-BH13 1.25-1.5,							
AM-BH13 1.5-1.75,	AM-BH13 1.75-2,							
AM-BH13 2-2.25,	AM-BH13 2.25-2.5,							
AM-BH13 2.5-2.75,	AM-BH13 2.75-3,							
AM-BH14 0-0.25,	AM-BH14 0.25-0.5,							
AM-BH14 0.5-0.75,	AM-BH14 0.75-1,							
AM-BH14 1-1.25,	AM-BH14 1.25-1.5,							
AM-BH14 1.5-1.75,	AM-BH14 1.75-2,							
AM-BH14 2-2.25,	AM-BH14 2.25-2.5,							
AM-BH14 2.5-2.75,	AM-BH14 2.75-3							
Snap Lock Bag - frozen (EA037)								
AM-BH15 0-0.25,	AM-BH15 0.25-0.5,	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓
AM-BH15 0.5-0.75,	AM-BH15 0.75-1,							
AM-BH15 1-1.25,	AM-BH15 1.25-1.5,							
AM-BH15 1.5-1.75,	AM-BH15 1.75-2,							
AM-BH15 2-2.25,	AM-BH15 2.25-2.5,							
AM-BH15 2.5-2.75,	AM-BH15 2.75-3,							
AM-BH16 0-0.25,	AM-BH16 0.25-0.5,							
AM-BH16 0.5-0.75,	AM-BH16 0.75-1,							
AM-BH16 1-1.25,	AM-BH16 1.25-1.5,							
AM-BH16 1.5-1.75,	AM-BH16 1.75-2,							
AM-BH16 2-2.25,	AM-BH16 2.25-2.5,							
AM-BH16 2.5-2.75,	AM-BH16 2.75-3,							
AM-BH25 0-0.25,	AM-BH25 0.25-0.5,							
AM-BH25 0.5-0.75,	AM-BH25 1.5-1.75,							
AM-BH25 1.75-2,	AM-BH25 2-2.25,							
AM-BH25 2.25-2.5,	AM-BH25 2.5-2.75,							
AM-BH25 2.75-3								
Snap Lock Bag - frozen (EA037)								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis - Continued								
AM-BH30 0-0.25, AM-BH30 0.5-0.75, AM-BH30 1-1.25, AM-BH30 1.5-1.75, AM-BH30 2-2.25, AM-BH30 2.5-2.75, AM-BH31 0.25-0.5, AM-BH31 0.75-1, AM-BH31 1.25-1.5, AM-BH31 1.75-2, AM-BH31 2.25-2.5, AM-BH31 2.75-3	AM-BH30 0.25-0.5, AM-BH30 0.75-1, AM-BH30 1.25-1.5, AM-BH30 1.75-2, AM-BH30 2.25-2.5, AM-BH31 0-0.25, AM-BH31 0.5-0.75, AM-BH31 1-1.25, AM-BH31 1.5-1.75, AM-BH31 2-2.25, AM-BH31 2.5-2.75,	**10-Oct-2016**	**19-Oct-2016**	08-Apr-2017	✓	**19-Oct-2016**	08-Apr-2017	✓
EA055: Moisture Content								
Snap Lock Bag - frozen (EA055-103) AM-BH13 2.75-3,	AM-BH14 0.75-1	**06-Oct-2016**	**----**	----	----	**20-Oct-2016**	20-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103) AM-BH15 1.75-2, AM-BH25 2.75-3	AM-BH16 2.75-3,	**07-Oct-2016**	**----**	----	----	**20-Oct-2016**	21-Oct-2016	✓
Snap Lock Bag - frozen (EA055-103) AM-BH30 0.75-1,	AM-BH31 1.75-2	**10-Oct-2016**	**----**	----	----	**20-Oct-2016**	24-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**----**	----	----	**18-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0-0.1, AM-BH25 0.25-0.5,	AM-BH15 0-0.1, AM-BH16 0.25-0.5, QAQC001, AM-BH25 0.5-0.6	**07-Oct-2016**	**----**	----	----	**18-Oct-2016**	21-Oct-2016	✓
Soil Glass Jar - Unpreserved (EA055-103) AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**----**	----	----	**18-Oct-2016**	24-Oct-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**19-Oct-2016**	04-Apr-2017	✓	**19-Oct-2016**	04-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T) AM-BH15 0.25-0.5, QAQC005, AM-BH16 0-0.1, AM-BH25 0.25-0.5	AM-BH15 0-0.1, AM-BH16 0.25-0.5, QAQC001,	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓
Soil Glass Jar - Unpreserved (EG005T) AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**19-Oct-2016**	08-Apr-2017	✓	**19-Oct-2016**	08-Apr-2017	✓
EG020T: Total Metals by ICP-MS								
Soil Glass Jar - Unpreserved (EG020R-T) AM-BH15 0-0.1,	AM-BH16 0-0.1	**07-Oct-2016**	**19-Oct-2016**	05-Apr-2017	✓	**19-Oct-2016**	05-Apr-2017	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**19-Oct-2016**	03-Nov-2016	✓	**19-Oct-2016**	03-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH15 0.25-0.5, QAQC005, AM-BH16 0-0.1, AM-BH25 0.25-0.5	AM-BH15 0-0.1, AM-BH16 0.25-0.5, QAQC001,	**07-Oct-2016**	**19-Oct-2016**	04-Nov-2016	✓	**19-Oct-2016**	04-Nov-2016	✓
Soil Glass Jar - Unpreserved (EG035T)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**19-Oct-2016**	07-Nov-2016	✓	**19-Oct-2016**	07-Nov-2016	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068)								
AM-BH15 0.25-0.5, AM-BH16 0.25-0.5,	QAQC005, QAQC001	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP068)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068)								
AM-BH15 0.25-0.5, AM-BH16 0.25-0.5,	QAQC005, QAQC001	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP071SG-S)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	27-Nov-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.5-0.6								
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH25 0.25-0.5		**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
Soil Glass Jar - Unpreserved (EP075(SIM))								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**20-Oct-2016**	27-Nov-2016	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.25-0.5								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.25-0.5								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH13 0.25-0.5,	AM-BH14 0.25-0.5	**06-Oct-2016**	**18-Oct-2016**	20-Oct-2016	✓	**19-Oct-2016**	20-Oct-2016	✓
Soil Glass Jar - Unpreserved (EP080)								
AM-BH15 0.25-0.5,	QAQC005,	**07-Oct-2016**	**18-Oct-2016**	21-Oct-2016	✓	**19-Oct-2016**	21-Oct-2016	✓
AM-BH16 0.25-0.5,	QAQC001,							
AM-BH25 0.25-0.5								
Soil Glass Jar - Unpreserved (EP080)								
AM-BH30 0.25-0.5,	AM-BH31 0.25-0.5	**10-Oct-2016**	**18-Oct-2016**	24-Oct-2016	✓	**19-Oct-2016**	24-Oct-2016	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
AM-BH13 0.25-0.5,	AM-BH13 2.75-3,	**06-Oct-2016**	**21-Oct-2016**	04-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH14 0.25-0.5,	AM-BH14 0.75-1							
HDPE Soil Jar (EP231X)								
AM-BH15 0.25-0.5,	AM-BH15 1.75-2,	**07-Oct-2016**	**21-Oct-2016**	05-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
QAQC005,	AM-BH16 0.25-0.5,							
AM-BH16 2.75-3,	QAQC001,							
AM-BH25 0.25-0.5,	AM-BH25 2.75-3							
HDPE Soil Jar (EP231X)								
AM-BH30 0.25-0.5,	AM-BH30 0.75-1,	**10-Oct-2016**	**21-Oct-2016**	08-Apr-2017	✓	**21-Oct-2016**	30-Nov-2016	✓
AM-BH31 0.25-0.5,	AM-BH31 1.75-2							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	8	80	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	7	58	12.07	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	3	25	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	21	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite R	EG020R-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	14	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
TRH - Semivolatile Fraction	EP071	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	**9.52**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
ASS Field Screening Analysis	* EA037	SOIL	In house: Referenced to Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite R	EG020R-T	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020. Metals in solids are determined following an appropriate acid digestion. The ICPMS technique ionizes selected elements. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass / charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab. Name:	ALS Environmental
Sampler By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐	EMAIL ☑ BULLETIN BOARD ☐	
Email Format:	PDF ☑ Excel ☐ Other ☐	Email Addre: scurti@golder.com.au	

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
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Fax: (07) 3721 5401
Golder Associates
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
1	AM-BH13	0	0.25	soil	6/10/2016		bag		1	N		X	X			
2	AM-BH13	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
3	AM-BH13	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
4	AM-BH13	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
5	AM-BH13	1	1.25	soil	6/10/2016		bag		1	N		X	X			
6	AM-BH13	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
7	AM-BH13	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
8	AM-BH13	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
9	AM-BH13	2	2.25	soil	6/10/2016		bag		1	N		X	X			
10	AM-BH13	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
11	AM-BH13	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
12	AM-BH13	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			X

Environmental Division
Brisbane
Work Order Reference
EB1624749

Telephone : + 61-7-3243 7222

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

TYPE OF SEAL & ORDER Analytical Laboratory LAB BATCH NUMBER

Security Seal Chilled Bill to:

Sample Container Frozen Address

Cool Box Ambient

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORAT

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project No:	1538021	Order/Job No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround Days:	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

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ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
13	AM-BH14	0	0.25	soil	6/10/2016		bag		1	N		X	X			
14	AM-BH14	0.25	0.5	soil	6/10/2016		bag+2jar		3	N		X	X	X	X	X
15	AM-BH14	0.5	0.75	soil	6/10/2016		bag		1	N		X	X			
16	AM-BH14	0.75	1	soil	6/10/2016		bag+jar		2	N		X	X			
17	AM-BH14	1	1.25	soil	6/10/2016		bag		1	N		X	X			X
18	AM-BH14	1.25	1.5	soil	6/10/2016		bag		1	N		X	X			
19	AM-BH14	1.5	1.75	soil	6/10/2016		bag		1	N		X	X			
20	AM-BH14	1.75	2	soil	6/10/2016		bag+jar		2	N		X	X			
21	AM-BH14	2	2.25	soil	6/10/2016		bag		1	N		X	X			
22	AM-BH14	2.25	2.5	soil	6/10/2016		bag		1	N		X	X			
23	AM-BH14	2.5	2.75	soil	6/10/2016		bag		1	N		X	X			
24	AM-BH14	2.75	3	soil	6/10/2016		bag+jar		2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRES	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Billed	
Suitable Containers		Frozen		Advised	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project No:	1538021	Order/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
25	AM-BH15	0	0.25	soil	7/10/2016		bag		1	N		X	X						
26	AM-BH15	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
27	AM-BH15	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
28	AM-BH15	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
29	AM-BH15	1	1.25	soil	7/10/2016		bag		1	N		X	X						
30	AM-BH15	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
31	AM-BH15	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
32	AM-BH15	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X			X			
33	AM-BH15	2	2.25	soil	7/10/2016		bag		1	N		X	X						
34	AM-BH15	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
35	AM-BH15	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
36	AM-BH15	2.75	3	soil	7/10/2016		bag+jar		2	N		X	X						
37	AM-BH15	0	0.1	soil	7/10/2016		jar		1	N							X	X	X
38	QAQC005			soil	7/10/2016		jar		1	N				X.	X	X			
	QAQC006			soil	7/10/2016		jar		1	N		PLEASE SHIP TO EUROFINS							
39	QAQC007			soil	7/10/2016		jar		1	N	X								
40	QAQC008			soil	7/10/2016		jar		1	N	X								

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analyzing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled	Bill to:	
Suitable Containers		Frozen	Address	
Cool Box		Ambient		

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Sub/Order No:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Phone: (07) 3721 5400
Fax: (07) 3721 5401
Golder Associates
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - TRH (C6-C40)/BTEXN /PAH plus 8 metals	S12 - OC/OP Pesticides	PFAS - extended suite 28 parameters	S-2 8 metals	zirconium	titanium
41	AM-BH16	0	0.25	soil	7/10/2016		bag		1	N		X	X						
42	AM-BH16	0.25	0.5	soil	7/10/2016		bag+2jar		3	N		X	X	X	X	X			
43	AM-BH16	0.5	0.75	soil	7/10/2016		bag		1	N		X	X						
44	AM-BH16	0.75	1	soil	7/10/2016		bag+jar		2	N		X	X						
45	AM-BH16	1	1.25	soil	7/10/2016		bag		1	N		X	X						
46	AM-BH16	1.25	1.5	soil	7/10/2016		bag		1	N		X	X						
47	AM-BH16	1.5	1.75	soil	7/10/2016		bag		1	N		X	X						
48	AM-BH16	1.75	2	soil	7/10/2016		bag+jar		2	N		X	X						
49	AM-BH16	2	2.25	soil	7/10/2016		bag		1	N		X	X						
50	AM-BH16	2.25	2.5	soil	7/10/2016		bag		1	N		X	X						
51	AM-BH16	2.5	2.75	soil	7/10/2016		bag		1	N		X	X						
52	AM-BH16	2.75	3	soil	7/10/2016		bag+jar		2	N		X'	X			X			
53	AM-BH16	0	0.1	soil	7/10/2016		jar		1	N							X	X	X
54	QAQC001			soil	7/10/2016		jar		2	N				X	X	X			
	QAQC002			soil	7/10/2016		jar		2	N	PLEASE SHIP TO EUROFINS								
55	QAQC003			soil	7/10/2016		jar		1	N	X								
56	QAQC004			soil	7/10/2016		jar		1	N	X								

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved: J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal: Chilled
Suitable Containers: Frozen
Cool Box: Ambient

LAB BATCH NUMBER
Billed:
Address:

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Order/Quote No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Golder Associates

Invoice to be sent to Accounts: auaccountspayable@golder.com.au

Project Manager: Krystle-Rae Biram

Contact Phone: 07 37215400 Email: KBiram@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH(C6-C40)/BTEXN /PAH plus 8 metals - silica gel cleanup	OC Pesticides - standard levels	PFAS - extended suite 28 parameters	EP075B - PAHs
54	AM-BH25	0	0.25	soil			bag		1	N		X	X				
55	AM-BH25	0.25	0.5	soil			bag+ 2 jars		3	N		X	X	X	X	X	
56	AM-BH25	0.5	0.75	soil			bag		1	N		X	X				
60	AM-BH25	1.5	1.75	soil			bag		2	N		X	X				
61	AM-BH25	1.75	2	soil			bag+jar		1	N		X	X				
62	AM-BH25	2	2.25	soil			bag		1	N		X	X				
63	AM-BH25	2.25	2.5	soil			bag		1	N		X	X				
64	AM-BH25	2.5	2.75	soil			bag		2	N		X	X				
65	AM-BH25	2.75	3	soil			bag+jar		1	N		X	X			X	
66	AM-BH25	0.5	0.6	soil			jar		1	N							X

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY	[signature]	GA	14-10-16		Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analytical Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Bilton	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Project ID:	1538021	Order Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
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Golder Associates

Comments/Special Instructions:

Samples from a declared Fire Ant Area: Y

Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
AM-BH30	0	0.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
AM-BH30	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			X
AM-BH30	1	1.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			
AM-BH30	2	2.25	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
AM-BH30	2.75	3	soil	10/10/2016		jar		1	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE** = Core(CR) **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER		
RECEIVED BY	CHRIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB BATCH NUMBER

Security Seal		Chilled		Bill to	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OR BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet..... of.....

Project ID:	1538021	Quote Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS Environmental
Sampled By:	Morgan Midgley		
Turnaround (Days):	5	BY:	
Report Format:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☑ BULLETIN BOARD ☐		
Email Format:	PDF ☑ Excel ☐ Other ☐ Email Addre: scurti@golder.com.au		

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Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Comments/Special Instructions:

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Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

	SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	Storage	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	EA037 - pHF/pHFOX - Fast Screen	EN020PR - dry 85oC and pulverise	S26 - SC TRH (C6-C40)/BTEXN /PAH plus 8 metals - SILICA GEL CLEANUP	OC Pesticides - standard levels	PFAS - extended suite 28 parameters
79	AM-BH31	0	0.25	soil	10/10/2016		bag		1	N		X	X			
80	AM-BH31	0.25	0.5	soil	10/10/2016		bag+2jar		3	N		X	X	X	X	X
81	AM-BH31	0.5	0.75	soil	10/10/2016		bag		1	N		X	X			
82	AM-BH31	0.75	1	soil	10/10/2016		bag+jar		2	N		X	X			
83	AM-BH31	1	1.25	soil	10/10/2016		bag		1	N		X	X			
84	AM-BH31	1.25	1.5	soil	10/10/2016		bag		1	N		X	X			
85	AM-BH31	1.5	1.75	soil	10/10/2016		bag		1	N		X	X			
86	AM-BH31	1.75	2	soil	10/10/2016		bag+jar		2	N		X	X			X
87	AM-BH31	2	2.25	soil	10/10/2016		bag		1	N		X	X			
88	AM-BH31	2.25	2.5	soil	10/10/2016		bag		1	N		X	X			
89	AM-BH31	2.5	2.75	soil	10/10/2016		bag		1	N		X	X			
90	AM-BH31	2.75	3	soil	10/10/2016		bag+jar		2	N		X	X			

SAMPLE MATRIX = Soil/Sediment/Fill/Other SAMPLE TYPE = Core(CR) HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Morgan Midgley	GOLDER	14-10-16	
RECEIVED BY	CURTIS	ALS	14/10/16	1600
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB BATCH NUMBER

Security Seal		Chilled		Bill to	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

WARNING!
SAMPLES TAKEN FROM A FIRE ANT RESTRICTED AREA
DISPOSE OF SAMPLES IN ACCORDANCE WITH DPI APPROVED PROCEDURE
FREEZE OF BAKE ENTIRE SAMPLE

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1624749**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS KRYSTLE-RAE BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 5
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 14-Oct-2016 4:00 PM	Issue Date	: 18-Oct-2016
Client Requested Due Date	: 21-Oct-2016	Scheduled Reporting Date	: **21-Oct-2016**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 3	Temperature	: 1.5, 1.2, 1.7°C
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 90 / 85

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **As only a soil jar suitable for PFAS testing was received for "AM-BH30 2.75-3" (ALS #78), pH Field and Fox (EA037) will not be tested on this sample.**
- **Samples "QAQC006" and "QAQC002" will be forwarded to Eurofins, as requested.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913). The estimated due date for this data is the 25/10/16.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Please be advised that a soil jar for PFAS testing was not received for "AM-BH14 1-1.25" (ALS #17), however one was received for "AM-BH14 0.75-1" (ALS #16). PFAS testing has been assigned to ALS #16, however if testing for this is not required on this sample, please contact ALS Client Services at ALSEnviro.Brisbane@alsglobal.com , ASAP.**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-001	[06-Oct-2016]	AM-BH13 0-0.25	✓						
EB1624749-002	[06-Oct-2016]	AM-BH13 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-003	[06-Oct-2016]	AM-BH13 0.5-0.75	✓						
EB1624749-004	[06-Oct-2016]	AM-BH13 0.75-1	✓						
EB1624749-005	[06-Oct-2016]	AM-BH13 1-1.25	✓						
EB1624749-006	[06-Oct-2016]	AM-BH13 1.25-1.5	✓						
EB1624749-007	[06-Oct-2016]	AM-BH13 1.5-1.75	✓						
EB1624749-008	[06-Oct-2016]	AM-BH13 1.75-2	✓						
EB1624749-009	[06-Oct-2016]	AM-BH13 2-2.25	✓						
EB1624749-010	[06-Oct-2016]	AM-BH13 2.25-2.5	✓						
EB1624749-011	[06-Oct-2016]	AM-BH13 2.5-2.75	✓						
EB1624749-012	[06-Oct-2016]	AM-BH13 2.75-3	✓	✓		✓			
EB1624749-013	[06-Oct-2016]	AM-BH14 0-0.25	✓						
EB1624749-014	[06-Oct-2016]	AM-BH14 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-015	[06-Oct-2016]	AM-BH14 0.5-0.75	✓						
EB1624749-016	[06-Oct-2016]	AM-BH14 0.75-1	✓	✓		✓			
EB1624749-017	[06-Oct-2016]	AM-BH14 1-1.25	✓						
EB1624749-018	[06-Oct-2016]	AM-BH14 1.25-1.5	✓						
EB1624749-019	[06-Oct-2016]	AM-BH14 1.5-1.75	✓						
EB1624749-020	[06-Oct-2016]	AM-BH14 1.75-2	✓						
EB1624749-021	[06-Oct-2016]	AM-BH14 2-2.25	✓						
EB1624749-022	[06-Oct-2016]	AM-BH14 2.25-2.5	✓						
EB1624749-023	[06-Oct-2016]	AM-BH14 2.5-2.75	✓						
EB1624749-024	[06-Oct-2016]	AM-BH14 2.75-3	✓						
EB1624749-025	[07-Oct-2016]	AM-BH15 0-0.25	✓						
EB1624749-026	[07-Oct-2016]	AM-BH15 0.25-0.5	✓	✓		✓	✓		✓
EB1624749-027	[07-Oct-2016]	AM-BH15 0.5-0.75	✓						
EB1624749-028	[07-Oct-2016]	AM-BH15 0.75-1	✓						
EB1624749-029	[07-Oct-2016]	AM-BH15 1-1.25	✓						
EB1624749-030	[07-Oct-2016]	AM-BH15 1.25-1.5	✓						
EB1624749-031	[07-Oct-2016]	AM-BH15 1.5-1.75	✓						
EB1624749-032	[07-Oct-2016]	AM-BH15 1.75-2	✓	✓		✓			
EB1624749-033	[07-Oct-2016]	AM-BH15 2-2.25	✓						
EB1624749-034	[07-Oct-2016]	AM-BH15 2.25-2.5	✓						
EB1624749-035	[07-Oct-2016]	AM-BH15 2.5-2.75	✓						

			SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-036	[07-Oct-2016]	AM-BH15 2.75-3	✓						
EB1624749-037	[07-Oct-2016]	AM-BH15 0-0.1		✓					
EB1624749-038	[07-Oct-2016]	QAQC005		✓		✓	✓		✓
EB1624749-041	[07-Oct-2016]	AM-BH16 0-0.25	✓						
EB1624749-042	[07-Oct-2016]	AM-BH16 0.25-0.5	✓	✓		✓	✓		✓
EB1624749-043	[07-Oct-2016]	AM-BH16 0.5-0.75	✓						
EB1624749-044	[07-Oct-2016]	AM-BH16 0.75-1	✓						
EB1624749-045	[07-Oct-2016]	AM-BH16 1-1.25	✓						
EB1624749-046	[07-Oct-2016]	AM-BH16 1.25-1.5	✓						
EB1624749-047	[07-Oct-2016]	AM-BH16 1.5-1.75	✓						
EB1624749-048	[07-Oct-2016]	AM-BH16 1.75-2	✓						
EB1624749-049	[07-Oct-2016]	AM-BH16 2-2.25	✓						
EB1624749-050	[07-Oct-2016]	AM-BH16 2.25-2.5	✓						
EB1624749-051	[07-Oct-2016]	AM-BH16 2.5-2.75	✓						
EB1624749-052	[07-Oct-2016]	AM-BH16 2.75-3	✓	✓		✓			
EB1624749-053	[07-Oct-2016]	AM-BH16 0-0.1		✓					
EB1624749-054	[07-Oct-2016]	QAQC001		✓		✓	✓		✓
EB1624749-057	[07-Oct-2016]	AM-BH25 0-0.25	✓						
EB1624749-058	[07-Oct-2016]	AM-BH25 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-059	[07-Oct-2016]	AM-BH25 0.5-0.75	✓						
EB1624749-060	[07-Oct-2016]	AM-BH25 1.5-1.75	✓						
EB1624749-061	[07-Oct-2016]	AM-BH25 1.75-2	✓						
EB1624749-062	[07-Oct-2016]	AM-BH25 2-2.25	✓						
EB1624749-063	[07-Oct-2016]	AM-BH25 2.25-2.5	✓						
EB1624749-064	[07-Oct-2016]	AM-BH25 2.5-2.75	✓						
EB1624749-065	[07-Oct-2016]	AM-BH25 2.75-3	✓	✓		✓			
EB1624749-066	[07-Oct-2016]	AM-BH25 0.5-0.6		✓					
EB1624749-067	[10-Oct-2016]	AM-BH30 0-0.25	✓						
EB1624749-068	[10-Oct-2016]	AM-BH30 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-069	[10-Oct-2016]	AM-BH30 0.5-0.75	✓						
EB1624749-070	[10-Oct-2016]	AM-BH30 0.75-1	✓	✓		✓			
EB1624749-071	[10-Oct-2016]	AM-BH30 1-1.25	✓						
EB1624749-072	[10-Oct-2016]	AM-BH30 1.25-1.5	✓						
EB1624749-073	[10-Oct-2016]	AM-BH30 1.5-1.75	✓						
EB1624749-074	[10-Oct-2016]	AM-BH30 1.75-2	✓						
EB1624749-075	[10-Oct-2016]	AM-BH30 2-2.25	✓						
EB1624749-076	[10-Oct-2016]	AM-BH30 2.25-2.5	✓						
EB1624749-077	[10-Oct-2016]	AM-BH30 2.5-2.75	✓						
EB1624749-079	[10-Oct-2016]	AM-BH31 0-0.25	✓						
EB1624749-080	[10-Oct-2016]	AM-BH31 0.25-0.5	✓	✓	✓	✓		✓	
EB1624749-081	[10-Oct-2016]	AM-BH31 0.5-0.75	✓						

			SOIL - EA037 ASS Field Screening Analysis	SOIL - EA055-103 Moisture Content	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP231X PFAS - Full Suite (28 analytes)	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 SG 8 metals/TRH (Silica Gel Clean Up)/BTEXN/PAH	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EB1624749-082	[10-Oct-2016]	AM-BH31 0.75-1	✓						
EB1624749-083	[10-Oct-2016]	AM-BH31 1-1.25	✓						
EB1624749-084	[10-Oct-2016]	AM-BH31 1.25-1.5	✓						
EB1624749-085	[10-Oct-2016]	AM-BH31 1.5-1.75	✓						
EB1624749-086	[10-Oct-2016]	AM-BH31 1.75-2	✓	✓		✓			
EB1624749-087	[10-Oct-2016]	AM-BH31 2-2.25	✓						
EB1624749-088	[10-Oct-2016]	AM-BH31 2.25-2.5	✓						
EB1624749-089	[10-Oct-2016]	AM-BH31 2.5-2.75	✓						
EB1624749-090	[10-Oct-2016]	AM-BH31 2.75-3	✓						

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	(On Hold) SOIL No analysis requested	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG020T (solids) Total Metals by ICP-MS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-02 8 Metals (incl. Digestion)
EB1624749-037	[07-Oct-2016]	AM-BH15 0-0.1		✓	✓		✓
EB1624749-039	[07-Oct-2016]	QAQC007	✓				
EB1624749-040	[07-Oct-2016]	QAQC008	✓				
EB1624749-053	[07-Oct-2016]	AM-BH16 0-0.1		✓	✓		✓
EB1624749-055	[07-Oct-2016]	QAQC003	✓				
EB1624749-056	[07-Oct-2016]	QAQC004	✓				
EB1624749-066	[07-Oct-2016]	AM-BH25 0.5-0.6				✓	
EB1624749-078	[10-Oct-2016]	AM-BH30 2.75-3	✓				

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au

KRYSTLE-RAE BIRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au

SERENA CURTI

- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Serena Curti**

Report **521151-S**
Project name BRISBANE AIRPORT
Project ID 1538021
Received Date Oct 26, 2016

Client Sample ID			**QAQC006**	**QAQC002**
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**B16-Oc24499**	**B16-Oc24500**
Date Sampled			**Oct 07, 2016**	**Oct 14, 2016**
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50
BTEX				
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	68	67
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5

Client Sample ID			QAQC006	QAQC002
Sample Matrix			Soil	Soil
Eurofins | mgt Sample No.			B16-Oc24499	B16-Oc24500
Date Sampled			Oct 07, 2016	Oct 14, 2016
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	98	82
p-Terphenyl-d14 (surr.)	1	%	69	55
Organochlorine Pesticides				
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1
Dibutylchlorendate (surr.)	1	%	95	79
Tetrachloro-m-xylene (surr.)	1	%	79	68
Per- and Polyfluorinated Alkyl Substances (PFASs)				
Perfluorobutanesulfonic acid (PFBS)	0.005	mg/kg	< 0.005	-
Perfluorobutanoic acid (PFBA)	0.005	mg/kg	< 0.005	-
Perfluorohexanesulfonic acid (PFHxS)	0.005	mg/kg	< 0.005	-
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	< 0.005	-
Perfluorodecanesulfonic acid (PFDS)	0.005	mg/kg	< 0.005	-
Perfluoropentanoic acid (PFPeA)	0.005	mg/kg	< 0.005	-
Perfluorohexanoic acid (PFHxA)	0.005	mg/kg	< 0.005	-
Perfluoroheptanoic acid (PFHpA)	0.005	mg/kg	< 0.005	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-
Perfluorononanoic acid (PFNA)	0.005	mg/kg	< 0.005	-
Perfluorodecanoic acid (PFDA)	0.005	mg/kg	< 0.005	-
Perfluoroundecanoic acid (PFUnA)	0.005	mg/kg	< 0.005	-
Perfluorododecanoic acid (PFDoA)	0.005	mg/kg	< 0.005	-
Perfluorotridecanoic acid (PFTrDA)	0.005	mg/kg	< 0.005	-

Client Sample ID			QAQC006	QAQC002
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**B16-Oc24499**	**B16-Oc24500**
Date Sampled			**Oct 07, 2016**	**Oct 14, 2016**
Test/Reference	LOR	Unit		
Per- and Polyfluorinated Alkyl Substances (PFASs)				
Perfluorotetradecanoic acid (PFTeDA)	0.005	mg/kg	< 0.005	-
Perfluorooctanesulfonamide (PFOSA)	0.01	mg/kg	< 0.01	-
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.01	mg/kg	< 0.01	-
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.01	mg/kg	< 0.01	-
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	0.005	mg/kg	< 0.005	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	0.005	mg/kg	< 0.005	-
d5-n-EtFOSAA (surr.)	1	%	119	-
13C-PFHxA (surr.)	1	%	104	-
13C8-PFOS (surr.)	1	%	115	-
Heavy Metals				
Arsenic	2	mg/kg	17	20
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	49	53
Copper	5	mg/kg	26	19
Lead	5	mg/kg	13	12
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	45	30
Zinc	5	mg/kg	120	49
% Moisture	1	%	25	21

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Oct 27, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Melbourne	Oct 27, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 27, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 27, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Oct 27, 2016	14 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Metals M8	Melbourne	Oct 27, 2016	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Organochlorine Pesticides	Melbourne	Oct 27, 2016	14 Day
- Method: USEPA 8081 Organochlorine Pesticides			
Per- and Polyfluorinated Alkyl Substances (PFASs)	Brisbane	Oct 27, 2016	180 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			
% Moisture	Melbourne	Oct 26, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

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Brisbane
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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Oct 26, 2016 9:00 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	521151	**Due:**	Nov 2, 2016
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Krystle-Rae Biram
Project Name:	BRISBANE AIRPORT				
Project ID:	1538021				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Organochlorine Pesticides	Per- and Polyfluorinated Alkyl Substances (PFASs)	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794							X		
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	QAQC006	Oct 07, 2016		Soil	B16-Oc24499	X	X	X	X
2	QAQC002	Oct 14, 2016		Soil	B16-Oc24500	X		X	X
Test Counts						2	1	2	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	mg/kg	< 0.005			0.005	Pass	
Perfluorobutanoic acid (PFBA)	mg/kg	< 0.005			0.005	Pass	
Perfluorohexanesulfonic acid (PFHxS)	mg/kg	< 0.005			0.005	Pass	
Perfluorooctanesulfonic acid (PFOS)	mg/kg	< 0.005			0.005	Pass	
Perfluorodecanesulfonic acid (PFDS)	mg/kg	< 0.005			0.005	Pass	
Perfluoropentanoic acid (PFPeA)	mg/kg	< 0.005			0.005	Pass	
Perfluorohexanoic acid (PFHxA)	mg/kg	< 0.005			0.005	Pass	
Perfluoroheptanoic acid (PFHpA)	mg/kg	< 0.005			0.005	Pass	
Perfluorooctanoic acid (PFOA)	mg/kg	< 0.005			0.005	Pass	
Perfluorononanoic acid (PFNA)	mg/kg	< 0.005			0.005	Pass	
Perfluorodecanoic acid (PFDA)	mg/kg	< 0.005			0.005	Pass	
Perfluoroundecanoic acid (PFUnA)	mg/kg	< 0.005			0.005	Pass	
Perfluorododecanoic acid (PFDoA)	mg/kg	< 0.005			0.005	Pass	
Perfluorotridecanoic acid (PFTrDA)	mg/kg	< 0.005			0.005	Pass	
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	< 0.005			0.005	Pass	
Perfluorooctanesulfonamide (PFOSA)	mg/kg	< 0.01			0.01	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/kg	< 0.01			0.01	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	mg/kg	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	mg/kg	< 0.005			0.005	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/kg	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	mg/kg	< 0.005			0.005	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	99			70-130	Pass	
TRH C10-C14	%	118			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	105			70-130	Pass	
Toluene	%	109			70-130	Pass	
Ethylbenzene	%	107			70-130	Pass	
m&p-Xylenes	%	105			70-130	Pass	
Xylenes - Total	%	104			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	123			70-130	Pass	
TRH C6-C10	%	95			70-130	Pass	
TRH >C10-C16	%	124			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	81			70-130	Pass	
Acenaphthylene	%	82			70-130	Pass	
Anthracene	%	90			70-130	Pass	
Benz(a)anthracene	%	90			70-130	Pass	
Benzo(a)pyrene	%	82			70-130	Pass	
Benzo(b&j)fluoranthene	%	70			70-130	Pass	
Benzo(g.h.i)perylene	%	83			70-130	Pass	
Benzo(k)fluoranthene	%	86			70-130	Pass	
Chrysene	%	94			70-130	Pass	
Dibenz(a.h)anthracene	%	102			70-130	Pass	
Fluoranthene	%	80			70-130	Pass	
Fluorene	%	80			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	89			70-130	Pass	
Naphthalene	%	82			70-130	Pass	
Phenanthrene	%	82			70-130	Pass	
Pyrene	%	79			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4.4'-DDD	%	129			70-130	Pass	
4.4'-DDE	%	109			70-130	Pass	
4.4'-DDT	%	95			70-130	Pass	
a-BHC	%	118			70-130	Pass	
Aldrin	%	112			70-130	Pass	
b-BHC	%	106			70-130	Pass	
d-BHC	%	122			70-130	Pass	
Dieldrin	%	119			70-130	Pass	
Endosulfan I	%	103			70-130	Pass	
Endosulfan II	%	104			70-130	Pass	
Endosulfan sulphate	%	105			70-130	Pass	
Endrin	%	102			70-130	Pass	
Endrin aldehyde	%	107			70-130	Pass	
Endrin ketone	%	127			70-130	Pass	
g-BHC (Lindane)	%	114			70-130	Pass	
Heptachlor	%	100			70-130	Pass	
Heptachlor epoxide	%	109			70-130	Pass	
Hexachlorobenzene	%	100			70-130	Pass	
Methoxychlor	%	73			70-130	Pass	
LCS - % Recovery							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	%	100			50-150	Pass	
Perfluorobutanoic acid (PFBA)	%	86			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	100			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	92			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	114			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	97			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	89			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	99			50-150	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluorooctanoic acid (PFOA)			%	93			50-150	Pass	
Perfluorononanoic acid (PFNA)			%	118			50-150	Pass	
Perfluorodecanoic acid (PFDA)			%	118			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)			%	121			50-150	Pass	
Perfluorododecanoic acid (PFDoA)			%	103			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)			%	98			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)			%	105			50-150	Pass	
Perfluorooctanesulfonamide (PFOSA)			%	99			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			%	132			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			%	103			50-150	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)			%	105			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)			%	94			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)			%	123			50-150	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	108			80-120	Pass	
Cadmium			%	106			80-120	Pass	
Chromium			%	112			80-120	Pass	
Copper			%	112			80-120	Pass	
Lead			%	119			80-120	Pass	
Mercury			%	115			75-125	Pass	
Nickel			%	111			80-120	Pass	
Zinc			%	109			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M16-No01063	NCP	%	77			70-130	Pass	
TRH C10-C14	M16-Oc26395	NCP	%	120			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M16-No01063	NCP	%	88			70-130	Pass	
Toluene	M16-No01063	NCP	%	87			70-130	Pass	
Ethylbenzene	M16-No01063	NCP	%	86			70-130	Pass	
m&p-Xylenes	M16-No01063	NCP	%	86			70-130	Pass	
o-Xylene	M16-No01063	NCP	%	85			70-130	Pass	
Xylenes - Total	M16-No01063	NCP	%	85			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M16-No01063	NCP	%	117			70-130	Pass	
TRH C6-C10	M16-No01063	NCP	%	70			70-130	Pass	
TRH >C10-C16	M16-Oc26395	NCP	%	126			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M16-Oc22487	NCP	%	99			70-130	Pass	
Acenaphthylene	M16-Oc22487	NCP	%	100			70-130	Pass	
Anthracene	M16-Oc22487	NCP	%	111			70-130	Pass	
Benz(a)anthracene	M16-Oc22487	NCP	%	97			70-130	Pass	
Benzo(a)pyrene	M16-Oc22487	NCP	%	124			70-130	Pass	
Benzo(b&j)fluoranthene	M16-Oc22487	NCP	%	96			70-130	Pass	
Benzo(g.h.i)perylene	M16-Oc22487	NCP	%	110			70-130	Pass	
Benzo(k)fluoranthene	M16-Oc22487	NCP	%	110			70-130	Pass	
Chrysene	M16-Oc22487	NCP	%	101			70-130	Pass	
Dibenz(a.h)anthracene	M16-Oc22487	NCP	%	129			70-130	Pass	
Fluoranthene	M16-Oc22487	NCP	%	93			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fluorene	M16-Oc22487	NCP	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M16-Oc22487	NCP	%	120			70-130	Pass	
Naphthalene	M16-Oc22487	NCP	%	98			70-130	Pass	
Phenanthrene	M16-Oc22487	NCP	%	103			70-130	Pass	
Pyrene	M16-Oc22487	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	M16-Oc23089	NCP	%	116			70-130	Pass	
4.4'-DDE	M16-Oc23089	NCP	%	109			70-130	Pass	
4.4'-DDT	M16-Oc23089	NCP	%	91			70-130	Pass	
a-BHC	M16-Oc23089	NCP	%	129			70-130	Pass	
Aldrin	M16-Oc23089	NCP	%	123			70-130	Pass	
b-BHC	M16-Oc23089	NCP	%	107			70-130	Pass	
d-BHC	M16-Oc23089	NCP	%	121			70-130	Pass	
Dieldrin	M16-Oc23089	NCP	%	123			70-130	Pass	
Endosulfan I	M16-Oc23089	NCP	%	106			70-130	Pass	
Endosulfan II	M16-Oc23089	NCP	%	101			70-130	Pass	
Endosulfan sulphate	M16-Oc23089	NCP	%	100			70-130	Pass	
Endrin	M16-Oc23089	NCP	%	105			70-130	Pass	
Endrin aldehyde	M16-Oc23089	NCP	%	98			70-130	Pass	
Endrin ketone	M16-Oc23089	NCP	%	123			70-130	Pass	
g-BHC (Lindane)	M16-Oc23089	NCP	%	122			70-130	Pass	
Heptachlor	M16-Oc23089	NCP	%	111			70-130	Pass	
Heptachlor epoxide	M16-Oc23089	NCP	%	119			70-130	Pass	
Hexachlorobenzene	M16-Oc23089	NCP	%	108			70-130	Pass	
Methoxychlor	M16-Oc23089	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S16-Oc24506	NCP	%	100			50-150	Pass	
Perfluorobutanoic acid (PFBA)	S16-Oc24506	NCP	%	85			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S16-Oc24506	NCP	%	98			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S16-Oc24506	NCP	%	92			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S16-Oc24506	NCP	%	114			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S16-Oc24506	NCP	%	96			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S16-Oc24506	NCP	%	89			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S16-Oc24506	NCP	%	98			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S16-Oc24506	NCP	%	91			50-150	Pass	
Perfluorononanoic acid (PFNA)	S16-Oc24506	NCP	%	119			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S16-Oc24506	NCP	%	99			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	S16-Oc24506	NCP	%	132			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	S16-Oc24506	NCP	%	114			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S16-Oc24506	NCP	%	89			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S16-Oc24506	NCP	%	73			50-150	Pass	
Perfluorooctanesulfonamide (PFOSA)	S16-Oc24506	NCP	%	83			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	S16-Oc24506	NCP	%	124			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	S16-Oc24506	NCP	%	102			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	S16-Oc24506	NCP	%	92			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	S16-Oc24506	NCP	%	105			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	S16-Oc24506	NCP	%	119			50-150	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Oc24734	NCP	%	108			75-125	Pass	
Cadmium	M16-Oc24734	NCP	%	108			75-125	Pass	
Chromium	M16-Oc24734	NCP	%	103			75-125	Pass	
Copper	M16-Oc24734	NCP	%	106			75-125	Pass	
Lead	M16-Oc24734	NCP	%	105			75-125	Pass	
Mercury	M16-Oc23342	NCP	%	116			70-130	Pass	
Nickel	M16-Oc24734	NCP	%	107			75-125	Pass	
Zinc	M16-Oc24734	NCP	%	106			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-No01062	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M16-Oc26394	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M16-Oc26394	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M16-Oc26394	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-No01062	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M16-No01062	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M16-No01062	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M16-No01062	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M16-No01062	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M16-No01062	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-No01062	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M16-No01062	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	M16-Oc26394	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M16-Oc26394	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M16-Oc26394	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Oc24927	NCP	mg/kg	8.1	7.7	5.0	30%	Pass	
Acenaphthylene	M16-Oc24927	NCP	mg/kg	0.6	< 0.5	57	30%	Fail	Q15
Anthracene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Oc24927	NCP	mg/kg	0.6	< 0.5	30	30%	Pass	
Fluorene	M16-Oc24927	NCP	mg/kg	6.2	6.0	3.0	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Oc24927	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Naphthalene	M16-Oc24927	NCP	mg/kg	15	14	8.0	30%	Pass	
Phenanthrene	M16-Oc24927	NCP	mg/kg	6.1	5.2	16	30%	Pass	
Pyrene	M16-Oc24927	NCP	mg/kg	1.0	1.0	2.0	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M16-Oc26538	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M16-Oc26538	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M16-Oc26538	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorobutanoic acid (PFBA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B16-Oc25773	NCP	mg/kg	0.008	0.008	3.0	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorododecanoic acid (PFDoA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorooctanesulfonamide (PFOSA)	B16-Oc25773	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	B16-Oc25773	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	B16-Oc25773	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	B16-Oc25773	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	B16-Oc25773	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Oc24733	NCP	mg/kg	6.8	7.1	4.0	30%	Pass	
Cadmium	M16-Oc24733	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Oc24733	NCP	mg/kg	21	19	10	30%	Pass	
Copper	M16-Oc24733	NCP	mg/kg	18	19	2.0	30%	Pass	
Lead	M16-Oc24733	NCP	mg/kg	53	54	1.0	30%	Pass	
Mercury	M16-Oc24733	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Oc24733	NCP	mg/kg	7.1	5.8	21	30%	Pass	
Zinc	M16-Oc24733	NCP	mg/kg	190	160	17	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B16-Oc24496	NCP	%	27	24	12	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Ryan Gilbert	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Jonathon Angell	Senior Analyst-Organic (QLD)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL

Sheet ___ of ___

Project ID:	1538021	**Quote/Order No.:**	**160715Q**
Site Location:	**Brisbane Airport**	**Lab Name:**	**EUROFINS**
Sampled By:	**Morgan Midgley**		
Turnaround (Days)	**5**	**BY:**	
Report Format:	**HARD** ☐ **FAX** ☐ **DISK** ☐ **EMAIL** ☐ **BULLETIN BOARD** ☐		
Email Format:	**PDF** ☐ **Excel** ☐ **Other** ☐ **Email Addre** mmidgley@golder.com.au		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton, Qld 4064
Phone: (07) 3721 5400
Fax: (07) 3721 5401
Invoice to be sent to Accounts: auaccountspayable@golder.com.au
Project Manager: Krystle-Rae Biram
Contact Phone: 07 37215400
Email: KBiram@golder.com.au

Golder Associates

Comments/Special Instructions:
Please CC results to scurti@golder.com.au

Samples from a declared Fire Ant Area: Y
Samples taken from a known Weed and or Pest Area: N

ANALYSIS REQUIRED

SAMPLE ID	Location & Depth		SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	HOLD	PFAS EXTENDED	B7 TRH BTEXN PAH As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	OCPs
QAQC006			soil	7-14/10/2016		2 jars		2	N		X	X	X
QAQC002			soil	14/10/2016		1 jar		1	N			X	X

#520188

#520186.

SAMPLE MATRIX = Soil/Sediment/Fill/Other **SAMPLE TYPE = Core(CR)** **HIGH CONCENTRATION:** Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes P = Natural Plastic, N = Nitric Acid Preserved, C = Sodium Hydroxide Preserved, J = Solvent Washed Acid Rinsed Jar, S = Solvent Washed Acid Rinsed Glass Bottle, VC = Hydrochloric Preserved Vial, VS = Sulphuric Acid P

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	Serena Curti	GOLDER	19/10/2016	11am
RECEIVED BY				
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Shipment Method
RELEASED BY					Shipping Ref.
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER

Security Seal		**Chilled**		**Bill to:**	
Suitable Containers		**Frozen**		**Address**	
Cool Box		**Ambient**			

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

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16 Mars Road
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Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Krystle-Rae Biram
Project name:	BRISBANE AIRPORT
Project ID:	1538021
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Oct 26, 2016 9:00 AM
Eurofins | mgt reference:	**521151**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Krystle-Rae Biram - KBiram@golder.com.au.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1625464**	Page	: 1 of 12
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016 15:15
Order number	: 1538021	Date Analysis Commenced	: 27-Oct-2016
C-O-C number	: ----	Issue Date	: 01-Nov-2016 22:12
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020-F (Dissolved Metals): LOR's have been raised for some samples due to matrix interference.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	----	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	----	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	----	----	----	----	----
Total Cations	----	0.01	meq/L	----	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	**0.008**	**0.005**	<0.002	**0.008**	**0.002**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	**0.005**	**0.003**	<0.002	**0.004**	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.007**	**0.012**	<0.002	**0.011**	<0.002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	**0.004**	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	**0.002**	<0.002	<0.002	**0.006**	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-BH08	AM-BH19	BIP-MW07	BIP-MW1	BIP-MW2
			Client sampling date / time	25-Oct-2016 12:06	25-Oct-2016 10:54	25-Oct-2016 12:32	25-Oct-2016 13:33	25-Oct-2016 14:15
Compound	CAS Number	LOR	Unit	EB1625464-001	EB1625464-002	EB1625464-003	EB1625464-004	EB1625464-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.022**	**0.020**	<0.002	**0.033**	**0.002**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	**0.007**	**0.012**	<0.002	**0.011**	<0.002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**92.4**	**109**	**91.0**	**82.7**	**90.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.65	6.26	6.43	6.06	6.99
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	35300	20400	9120	14800	51400
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	341	362	185	95	297
Total Alkalinity as CaCO3	----	1	mg/L	341	362	185	95	297
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	242	570	218	388	260
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2620	2660	1140	1760	2400
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	13300	6920	2750	4900	20700
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	436	348	192	242	407
Magnesium	7439-95-4	1	mg/L	1010	649	265	335	1220
Sodium	7440-23-5	1	mg/L	6800	3500	1420	2460	10700
Potassium	7440-09-7	1	mg/L	238	54	39	63	375
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.10	0.08	<0.01	<0.01	<0.05
Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.005	0.001	0.004	<0.005
Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	<0.0001	<0.0001	<0.0005
Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Copper	7440-50-8	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Nickel	7440-02-0	0.001	mg/L	0.024	0.074	0.018	0.032	0.018
Lead	7439-92-1	0.001	mg/L	<0.005	<0.005	<0.001	<0.001	<0.005
Zinc	7440-66-6	0.005	mg/L	0.118	0.194	0.076	0.118	0.134
Iron	7439-89-6	0.05	mg/L	12.2	87.6	7.58	87.6	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	436	258	105	177	640
Total Cations	----	0.01	meq/L	407	224	94.2	148	596

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	**3.53**	**6.93**	**5.45**	**8.77**	**3.57**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	**0.171**	**0.011**	**0.037**	**0.006**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	**0.084**	**0.006**	**0.029**	**0.008**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	**0.394**	**0.054**	**0.293**	**0.062**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	**0.002**	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	**0.011**	<0.002	**0.021**	**0.004**
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	**0.004**	<0.002	**0.005**	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	**0.019**	<0.002	**0.023**	**0.003**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	**0.005**	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	**0.003**	<0.002	**0.016**	**0.004**
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	AM-MW31	AM-MW14	AM-MW15	AM-MW16	AM-MW10
			Client sampling date / time	25-Oct-2016 13:12	25-Oct-2016 09:40	25-Oct-2016 10:32	25-Oct-2016 09:07	25-Oct-2016 11:27
Compound	CAS Number	LOR	Unit	EB1625464-006	EB1625464-007	EB1625464-008	EB1625464-009	EB1625464-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	**0.686**	**0.071**	**0.431**	**0.087**
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	<0.002	**0.405**	**0.054**	**0.314**	**0.066**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**87.2**	**89.4**	**86.8**	**102**	**87.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	----	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.004**	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.032**	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.120**	<0.005	----	----	----
Iron	7439-89-6	0.05	mg/L	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	----	----	----	----	----
Total Cations	----	0.01	meq/L	----	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	**0.036**	<0.002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	**0.029**	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.291**	<0.002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	**0.023**	<0.002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	**0.005**	<0.002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	**0.022**	<0.002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	**0.005**	<0.002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	**0.011**	<0.002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QAQC100	QAQC300	----	----	----
			Client sampling date / time	25-Oct-2016 09:07	25-Oct-2016 14:30	----	----	----
Compound	CAS Number	LOR	Unit	EB1625464-011	EB1625464-012	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.422**	<0.002	----	----	----
Sum of PFHxS and PFOS	375-85-9/1763-23-1	0.002	µg/L	**0.314**	<0.002	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**82.4**	**94.5**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	70	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1625464**	Page	: 1 of 9
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016
Order number	: 1538021	Date Analysis Commenced	: 27-Oct-2016
C-O-C number	: ----	Issue Date	: 01-Nov-2016
Sampler	: MORGAN MIDGLEY		
Site	: Brisbane Airport		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA005P: pH by PC Titrator (QC Lot: 632975)									
EB1625473-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.75	6.90	2.20	0% - 20%
EB1625444-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.56	7.53	0.398	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 632976)									
EB1625444-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	431	431	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 632978)									
EB1625444-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	46	48	4.58	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	46	48	4.58	0% - 20%
ED038A: Acidity (QC Lot: 634475)									
EB1625246-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	6	6	0.00	No Limit
EB1625464-009	AM-MW16	ED038: Acidity as CaCO3	----	1	mg/L	388	400	3.08	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 630949)									
EB1625413-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	5620	5460	2.91	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 630948)									
EB1625413-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	2410	2510	4.32	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 631832)									
EB1625502-003	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	494	493	0.253	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	51	51	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	254	250	1.60	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	191	190	0.00	0% - 20%
EB1625464-006	AM-MW31	ED093F: Calcium	7440-70-2	1	mg/L	436	448	2.77	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	1010	1040	3.01	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	6800	6940	2.00	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 631832) - continued									
EB1625464-006	AM-MW31	ED093F: Potassium	7440-09-7	1	mg/L	238	244	2.52	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 631833)									
EB1625502-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0006	0.0006	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.023	0.024	0.00	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	1.31	1.25	4.96	0% - 20%
EB1625464-006	AM-MW31	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.024	0.024	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.118	0.123	3.52	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.10	0.08	14.9	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	12.2	12.6	3.41	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 631834)									
EB1625507-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0001	0.0001	0.00	No Limit
EB1625464-006	AM-MW31	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	2.61	2.51	4.02	0% - 20%
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	1.64	1.57	4.06	0% - 20%
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	7.91	7.58	4.36	0% - 20%
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	0.042	0.041	3.36	0% - 20%
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.347	0.393	12.5	0% - 20%
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 633504) - continued									
EB1625464-003	BIP-MW07	EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	0.042	0.034	18.9	0% - 20%
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	0.422	0.418	0.952	0% - 20%
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	0.009	0.007	26.8	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	0.025	0.022	15.3	0% - 50%
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.002	0.00	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 633504) - continued									
EB1625449-001	Anonymous	EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 633504)									
EB1625449-001	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EB1625464-003	BIP-MW07	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 632975)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98	102
				----	7 pH Unit	101	98	102
EA010P: Conductivity by PC Titrator (QCLot: 632976)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	4000 µS/cm	95.7	91	107
				<1	12890 µS/cm	96.0	91	107
ED037P: Alkalinity by PC Titrator (QCLot: 632978)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	106	80	120
ED038A: Acidity (QCLot: 634475)								
ED038: Acidity as CaCO3	----	----	mg/L	----	100 mg/L	104	90	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 630949)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	96.2	85	118
				<1	100 mg/L	93.0	85	118
ED045G: Chloride by Discrete Analyser (QCLot: 630948)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	96.2	90	115
				<1	1000 mg/L	106	90	115
ED093F: Dissolved Major Cations (QCLot: 631832)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
ED093F: Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
ED093F: Sodium	7440-23-5	1	mg/L	<1	----	----	----	----
ED093F: Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 631833)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	89.7	79	118
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.8	88	116
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	88	108
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.0	87	113
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.2 mg/L	96.0	88	114
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.2	89	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.9	89	113
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.2 mg/L	97.6	87	113
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	85.5	82	114
EG035F: Dissolved Mercury by FIMS (QCLot: 631834)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.9	84	118
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504) - continued								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.05 µg/L	103	60	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.05 µg/L	99.4	60	130
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.05 µg/L	120	60	130
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.05 µg/L	121	60	130
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.05 µg/L	115	60	130
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.002	µg/L	<0.002	0.05 µg/L	91.2	60	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.05 µg/L	101	60	130
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.05 µg/L	90.2	60	130
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.05 µg/L	104	60	130
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.05 µg/L	104	60	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.05 µg/L	90.2	60	130
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.05 µg/L	96.0	60	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.05 µg/L	115	60	130
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.05 µg/L	84.8	60	130
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.05 µg/L	85.0	60	130
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.05 µg/L	78.6	60	130
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.125 µg/L	71.0	60	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 633504)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.05 µg/L	120	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.125 µg/L	106	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.125 µg/L	83.0	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.005	µg/L	<0.005	0.125 µg/L	90.8	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.125 µg/L	76.4	60	130
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.05 µg/L	86.6	60	130
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.05 µg/L	117	60	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 633504)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.05 µg/L	97.8	60	130
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.05 µg/L	110	60	130
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.05 µg/L	81.2	60	130
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.05 µg/L	78.2	60	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 630949)							
EB1625451-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	# Not Determined	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 630948)							
EB1625451-001	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	89.9	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 631833)							
EB1625464-007	AM-MW14	EG020A-F: Aluminium	7429-90-5	0.5 mg/L	117	70	130
		EG020A-F: Arsenic	7440-38-2	0.1 mg/L	110	70	130
		EG020A-F: Cadmium	7440-43-9	0.1 mg/L	101	70	130
		EG020A-F: Chromium	7440-47-3	0.1 mg/L	90.5	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	86.0	70	130
		EG020A-F: Lead	7439-92-1	0.1 mg/L	110	70	130
		EG020A-F: Nickel	7440-02-0	0.1 mg/L	88.5	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	99.6	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 631834)							
EB1625464-007	AM-MW14	EG035F: Mercury	7439-97-6	0.01 mg/L	71.3	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.05 µg/L	94.0	50	130
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.05 µg/L	# Not Determined	60	130
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.05 µg/L	90.8	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.05 µg/L	55.9	50	130
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.05 µg/L	71.0	50	130
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.05 µg/L	# Not Determined	50	130
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.05 µg/L	64.4	61	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.05 µg/L	69.4	60	130
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.05 µg/L	79.8	50	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.05 µg/L	96.0	65	130
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.05 µg/L	72.8	50	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 633504) - continued							
EB1625449-002	Anonymous	EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.05 µg/L	67.0	50	130
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.05 µg/L	60.4	30	130
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.125 µg/L	47.4	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.05 µg/L	103	50	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.125 µg/L	83.4	50	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.125 µg/L	70.5	50	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7	0.125 µg/L	63.7	36	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.125 µg/L	60.0	30	130
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.05 µg/L	62.8	50	130
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.05 µg/L	64.0	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 633504)							
EB1625449-002	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05 µg/L	84.4	50	130
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05 µg/L	69.8	60	130
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05 µg/L	76.2	60	130
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05 µg/L	60.2	50	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1625464**	Page	: 1 of 8
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Telephone	: +61 7 3243 7222
Project	: 1538021	Date Samples Received	: 25-Oct-2016
Site	: Brisbane Airport	Issue Date	: 01-Nov-2016
Sampler	: MORGAN MIDGLEY	No. of samples received	: 12
Order number	: 1538021	No. of samples analysed	: 12

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EB1625451--001	Anonymous	**Sulfate as SO4 - Turbidimetric**	14808-79-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluoropentane sulfonic acid (PFPeS)**	2706-91-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	EB1625449--002	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	EB1625449--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
AM-MW31, AM-MW15, AM-MW10	AM-MW14, AM-MW16,	----	----	----	27-Oct-2016	25-Oct-2016	**2**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	25-Oct-2016	×
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	08-Nov-2016	✓
ED038A: Acidity							
Clear Plastic Bottle - Natural (ED038) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**28-Oct-2016**	08-Nov-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**27-Oct-2016**	22-Nov-2016	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Natural (EG020A-F) QAQC300	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	23-Apr-2017	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) AM-MW31, AM-MW14, AM-MW15, AM-MW16, AM-MW10, QAQC100	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	23-Apr-2017	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F)								
QAQC300		**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)								
AM-MW31,	AM-MW14,	**25-Oct-2016**	**----**	----	----	**01-Nov-2016**	22-Nov-2016	✓
AM-MW15,	AM-MW16,							
AM-MW10,	QAQC100							
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL)								
AM-BH08,	AM-BH19,	**25-Oct-2016**	**28-Oct-2016**	23-Apr-2017	✓	**28-Oct-2016**	23-Apr-2017	✓
BIP-MW07,	BIP-MW1,							
BIP-MW2,	AM-MW31,							
AM-MW14,	AM-MW15,							
AM-MW16,	AM-MW10,							
QAQC100,	QAQC300							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction followed by and LC-Electrospray-MS-MS, Negative Mode using MRM. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers.

Preparation Methods	Method	Matrix	Method Descriptions
SPE preparation for LL and saline PFCs	EP231-SPE	WATER	In house

CHAIN OF CUSTODY DOCUMENTATION - WATER

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	ALS
Sampled By:	Morgan Midgley		
Turnaround (Days):	5 days	BY:	
Report Format:	Please provide data in ESDAT format		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton Qld 4064
Phone : (07) 3721 5400
Fax : (07) 3721 5401
Invoice to be sent to Accounts Aust: auaccountspayable@golder.com.au
Project Manager: K Biram
Contact Phone: 37215400
Email: scurti@golder.com.au

Comments/Special Instructions:

Copy results to: pscells@golder.com.au
scurti@golder.com.au

ANALYSIS REQUIRED

	SAMPLE ID	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE	No.CONTAINERS	POSSIBLE HIGH CONCENTRATION	PFAS extended suite 28 - ultra trace levels	pH	Major Anions - Cl, So4, alkalinity	Electrical conductivity	Major Cations - Ca, Mg, K, Na	Acidity	W-2 8 metals	Dissolved Al + Fe
1	AM-BH08	Water	25-10-16	1206	Ice	2	N	X							
2	AM-BH19	Water	25-10-16	1054	Ice	2	N	X							
3	BIP-~~BAC~~-MW07	Water	25.10.16	12.32	Ice	2	N	X							
4	BIP-MW1	Water	25.10.16	13.33	Ice	2	N	X							
5	BIP-MW2	Water	25-10-16	13.15	Ice	2	N	X							
6	AM-~~CP11~~MW31	Water	25-10-16	1312	Ice	4	N	X	X	X	X	X	X	X	X
7	AM-MW14	Water	25-10-16	0940	Ice	4	N	X	X	X	X	X	X	X	X
8	AM-MW15	Water	25.10.16	10.32	Ice	4	N	X	X	X	X	X	X	X	X
9	AM-MW16	Water	25.10.16	9.07	Ice	4	N	X	X	X	X	X	X	X	X
10	AM-MW10	Water	25.10.16	11.27	Ice	4	N	X	X	X	X	X	X	X	X
11	QAQC100	Water	25.10.16	9.07	Ice	4	N	X						X	
12	QAQC300	Water	25.10.16	14.30	Ice	3	N	X						X	

HOLD ALL OTHER BOTTLES NOT SELECTED FOR ANALYSIS

Environmental Division
Brisbane
Work Order Reference
EB1625464

Telephone : +61-7-3243 7222

SAMPLE MATRIX =Water SAMPLE TYPE = Discrete(DC) POSSIBLE HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid Preserved Vial; BS = Sulphuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; O = Other

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	[signature]	GOLDER		
RECEIVED BY	[signature]	ALS	25/10/16	15:15
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref.
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Security Seal		Chilled		LAB BATCH NUMBER	
Suitable Containers		Frozen		Bill to:	
Cool Box		Ambient		Address:	

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1625464**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: K BIRAM	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kbiram@golder.com.au	E-mail	: carsten.emrich@alsenviro.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1538021	Page	: 1 of 3
Order number	: 1538021	Quote number	: ES2016GOLASS0005 (EN/002/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Brisbane Airport		
Sampler	: MORGAN MIDGLEY		

Dates

Date Samples Received	: 25-Oct-2016 3:15 PM	Issue Date	: 25-Oct-2016
Client Requested Due Date	: 01-Nov-2016	Scheduled Reporting Date	: **01-Nov-2016**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.4°C, 5.8°C - Ice present
Receipt Detail	: MEDIUM ESKIES	No. of samples received / analysed	: 12 / 12

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- **PFAS analysis will be conducted by ALS Environmental, Sydney, NATA accreditation no. 825, Site No. 10911 (Micro site no. 14913).**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
QAQC300	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
QAQC300	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PC)	WATER - EA010P Conductivity (PC)	WATER - ED038 Default Acidity as CaCO3 only	WATER - EG020F Dissolved Metals by ICPMS	WATER - EP231X-LL PFAS - Full Suite Low Level (28 analytes)	WATER - NT-01 & 02 Ca, Mg, Na, K, Cl, SO4, Alkalinity	WATER - W-02 8 Metals
EB1625464-001	25-Oct-2016 12:06	AM-BH08					✓		
EB1625464-002	25-Oct-2016 10:54	AM-BH19					✓		
EB1625464-003	25-Oct-2016 12:32	BIP-MW07					✓		
EB1625464-004	25-Oct-2016 13:33	BIP-MW1					✓		
EB1625464-005	25-Oct-2016 14:15	BIP-MW2					✓		
EB1625464-006	25-Oct-2016 13:12	AM-MW31	✓	✓	✓	✓	✓	✓	✓
EB1625464-007	25-Oct-2016 09:40	AM-MW14	✓	✓	✓	✓	✓	✓	✓
EB1625464-008	25-Oct-2016 10:32	AM-MW15	✓	✓	✓	✓	✓	✓	✓
EB1625464-009	25-Oct-2016 09:07	AM-MW16	✓	✓	✓	✓	✓	✓	✓
EB1625464-010	25-Oct-2016 11:27	AM-MW10	✓	✓	✓	✓	✓	✓	✓
EB1625464-011	25-Oct-2016 09:07	QAQC100					✓		✓
EB1625464-012	25-Oct-2016 14:30	QAQC300					✓		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	auaccountspayable@golder.com.au
K BIRAM		
- *AU Certificate of Analysis - NATA (COA)	Email	kbiram@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kbiram@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kbiram@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kbiram@golder.com.au
- Chain of Custody (CoC) (COC)	Email	kbiram@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kbiram@golder.com.au
PAUL SCELLS		
- *AU Certificate of Analysis - NATA (COA)	Email	pscells@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	pscells@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	pscells@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	pscells@golder.com.au
- Chain of Custody (CoC) (COC)	Email	pscells@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	pscells@golder.com.au
SERENA CURTI		
- *AU Certificate of Analysis - NATA (COA)	Email	scurti@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	scurti@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	scurti@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	scurti@golder.com.au
- Chain of Custody (CoC) (COC)	Email	scurti@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	scurti@golder.com.au

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Golder Associates Pty Ltd
147 Coronation Dve
Milton
QLD 4064

Attention: **Serena Curti**

Report **521162-W**
Project name BRISBANE AIRPORT
Project ID 1538021
Received Date Oct 26, 2016

Client Sample ID			**QAQC200**
Sample Matrix			**Water**
Eurofins | mgt Sample No.			**B16-Oc24663**
Date Sampled			**Oct 25, 2016**
Test/Reference	LOR	Unit	
Per- and Polyfluorinated Alkyl Substances (PFASs)			
Perfluorobutanesulfonic acid (PFBS)	0.00001	mg/L	0.00002
Perfluorobutanoic acid (PFBA)	0.00005	mg/L	< 0.00005
Perfluorohexanesulfonic acid (PFHxS)	0.00001	mg/L	[N09]0.00012
Perfluorooctanesulfonic acid (PFOS)	0.00001	mg/L	[N09]0.00004
Perfluorodecanesulfonic acid (PFDS)	0.00001	mg/L	< 0.00001
Perfluoropentanoic acid (PFPeA)	0.00001	mg/L	< 0.00001
Perfluorohexanoic acid (PFHxA)	0.00001	mg/L	[N09]0.00005
Perfluoroheptanoic acid (PFHpA)	0.00001	mg/L	< 0.00001
Perfluorooctanoic acid (PFOA)	0.00001	mg/L	[N09]0.00002
Perfluorononanoic acid (PFNA)	0.00001	mg/L	< 0.00001
Perfluorodecanoic acid (PFDA)	0.00001	mg/L	< 0.00001
Perfluoroundecanoic acid (PFUnA)	0.00001	mg/L	< 0.00001
Perfluorododecanoic acid (PFDoA)	0.00001	mg/L	< 0.00001
Perfluorotridecanoic acid (PFTrDA)	0.00001	mg/L	< 0.00001
Perfluorotetradecanoic acid (PFTeDA)	0.00001	mg/L	< 0.00001
Perfluorooctanesulfonamide (PFOSA)	0.00005	mg/L	< 0.00005
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.00005	mg/L	< 0.00005
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.00005	mg/L	< 0.00005
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	0.00001	mg/L	< 0.00001
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.00005	mg/L	< 0.00005
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	0.00001	mg/L	< 0.00001
d5-n-EtFOSAA (surr.)	1	%	26
13C-PFHxA (surr.)	1	%	69
13C8-PFOS (surr.)	1	%	49
Heavy Metals			
Arsenic	0.001	mg/L	0.005
Cadmium	0.0002	mg/L	0.0002
Chromium	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Lead	0.001	mg/L	< 0.001
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	0.031
Zinc	0.005	mg/L	0.12

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluorinated Alkyl Substances (PFASs)	Brisbane	Oct 26, 2016	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluorinated Alkyl Substances by LC-MS/MS			
Metals M8	Melbourne	Oct 26, 2016	28 Days
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Golder Associates Pty Ltd (Qld)	**Order No.:**		**Received:**	Oct 26, 2016 9:00 AM
Address:	147 Coronation Dve Milton QLD 4064	**Report #:**	521162	**Due:**	Nov 2, 2016
		Phone:	(07) 3721 5400	**Priority:**	5 Day
		Fax:	(07) 3721 5401	**Contact Name:**	Krystle-Rae Biram
Project Name:	BRISBANE AIRPORT				
Project ID:	1538021				

Eurofins | mgt Analytical Services Manager : Ryan Gilbert

Sample Detail						Metals M8	Per- and Polyfluorinated Alkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	QAQC200	Oct 25, 2016		Water	B16-Oc24663	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	mg/L	< 0.00001			0.00001	Pass	
Perfluorobutanoic acid (PFBA)	mg/L	< 0.00005			0.00005	Pass	
Perfluorohexanesulfonic acid (PFHxS)	mg/L	< 0.00001			0.00001	Pass	
Perfluorooctanesulfonic acid (PFOS)	mg/L	< 0.00001			0.00001	Pass	
Perfluorodecanesulfonic acid (PFDS)	mg/L	< 0.00001			0.00001	Pass	
Perfluoropentanoic acid (PFPeA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorohexanoic acid (PFHxA)	mg/L	< 0.00001			0.00001	Pass	
Perfluoroheptanoic acid (PFHpA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorooctanoic acid (PFOA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorononanoic acid (PFNA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorodecanoic acid (PFDA)	mg/L	< 0.00001			0.00001	Pass	
Perfluoroundecanoic acid (PFUnA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorododecanoic acid (PFDoA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorotridecanoic acid (PFTrDA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorotetradecanoic acid (PFTeDA)	mg/L	< 0.00001			0.00001	Pass	
Perfluorooctanesulfonamide (PFOSA)	mg/L	< 0.00005			0.00005	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	mg/L	< 0.00005			0.00005	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	mg/L	< 0.00005			0.00005	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	mg/L	< 0.00001			0.00001	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/L	< 0.00005			0.00005	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	mg/L	< 0.00001			0.00001	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Per- and Polyfluorinated Alkyl Substances (PFASs)							
Perfluorobutanesulfonic acid (PFBS)	%	80			50-150	Pass	
Perfluorobutanoic acid (PFBA)	%	86			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	82			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	83			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	52			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	74			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	87			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	79			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	84			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	101			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	97			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	%	75			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	%	53			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	54			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	65			50-150	Pass	
Perfluorooctanesulfonamide (PFOSA)	%	70			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	%	58			50-150	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			%	61			50-150	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)			%	76			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)			%	89			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)			%	81			50-150	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	89			80-120	Pass	
Cadmium			%	90			80-120	Pass	
Chromium			%	87			80-120	Pass	
Copper			%	86			80-120	Pass	
Lead			%	85			80-120	Pass	
Mercury			%	86			75-125	Pass	
Nickel			%	89			80-120	Pass	
Zinc			%	91			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	M16-Oc24616	NCP	%	81			50-150	Pass	
Perfluorobutanoic acid (PFBA)	M16-Oc24616	NCP	%	94			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M16-Oc24616	NCP	%	83			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	M16-Oc24616	NCP	%	91			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	M16-Oc24616	NCP	%	54			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	M16-Oc24616	NCP	%	76			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	M16-Oc24616	NCP	%	94			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	M16-Oc24616	NCP	%	80			50-150	Pass	
Perfluorooctanoic acid (PFOA)	M16-Oc24616	NCP	%	92			50-150	Pass	
Perfluorononanoic acid (PFNA)	M16-Oc24616	NCP	%	98			50-150	Pass	
Perfluorodecanoic acid (PFDA)	M16-Oc24616	NCP	%	97			50-150	Pass	
Perfluoroundecanoic acid (PFUnA)	M16-Oc24616	NCP	%	86			50-150	Pass	
Perfluorododecanoic acid (PFDoA)	M16-Oc24616	NCP	%	57			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	M16-Oc24616	NCP	%	53			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M16-Oc24616	NCP	%	62			50-150	Pass	
Perfluorooctanesulfonamide (PFOSA)	M16-Oc24616	NCP	%	67			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	M16-Oc24616	NCP	%	64			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	M16-Oc24616	NCP	%	68			50-150	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	M16-Oc24616	NCP	%	62			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	M16-Oc24616	NCP	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	M16-Oc24616	NCP	%	76			50-150	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	B16-Oc24501	NCP	%	92			75-125	Pass	
Cadmium	B16-Oc24501	NCP	%	89			75-125	Pass	
Chromium	B16-Oc24501	NCP	%	87			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	B16-Oc24501	NCP	%	83			75-125	Pass	
Lead	B16-Oc24501	NCP	%	82			75-125	Pass	
Mercury	B16-Oc24501	NCP	%	86			70-130	Pass	
Nickel	B16-Oc24501	NCP	%	88			75-125	Pass	
Zinc	B16-Oc24501	NCP	%	87			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Per- and Polyfluorinated Alkyl Substances (PFASs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M16-Oc24593	NCP	mg/L	0.00011	0.00012	6.0	30%	Pass	
Perfluorobutanoic acid (PFBA)	M16-Oc24615	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M16-Oc24593	NCP	mg/L	0.0017	0.0019	7.0	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M16-Oc24593	NCP	mg/L	0.030	0.031	2.0	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M16-Oc24593	NCP	mg/L	< 0.00002	< 0.00002	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorododecanoic acid (PFDoA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M16-Oc24615	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Perfluorooctanesulfonamide (PFOSA)	M16-Oc24615	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	M16-Oc24615	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	M16-Oc24615	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	M16-Oc24593	NCP	mg/L	< 0.00002	< 0.00002	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	M16-Oc24593	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	M16-Oc24593	NCP	mg/L	< 0.00002	< 0.00002	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	B16-Oc24501	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Cadmium	B16-Oc24501	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium	B16-Oc24501	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Copper	B16-Oc24501	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Lead	B16-Oc24501	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	B16-Oc24501	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Nickel	B16-Oc24501	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	B16-Oc24501	NCP	mg/L	0.013	0.010	21	30%	Pass	

Quality Control Analyte Summary Compliance

The table below is the actual occurrence of QC performed on the batch of samples within this report and as defined below

Analysis	Samples Analysed	Laboratory Duplicates Reported	Laboratory Matrix Spikes Reported	Method Blanks Reported	Laboratory Control Samples Reported
Per- and Polyfluorinated Alkyl Substances	1	1	1	1	1
Heavy Metals	1	1	1	1	1

Quality Control Parameter Frequency Compliance follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure April 2011, Schedule B3, Guideline on Laboratory Analysis of Potentially Contaminated Soils and US EPA SW-846 Chapter 1: 'Quality Control'.

It comprises the following when a laboratory process batch is deemed to consist of up to 20 samples that are similar in terms of matrix and test procedure, and are processed as one unit for QC purposes. If more than 20 samples are being processed, they are considered as more than one batch.

Method blank

One method blank per process batch.

Laboratory duplicate

There should be at least one duplicate per process batch, or two duplicates if the process batch exceeds 10 samples.

Laboratory control sample (LCS)

There should be at least one LCS per process batch.

Matrix spikes

There should be one matrix spike per matrix type per process batch.

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.

Authorised By

Ryan Gilbert	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Jonathon Angell	Senior Analyst-Organic (QLD)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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CHAIN OF CUSTODY DOCUMENTATION - WATER

Project ID:	1538021	Quote/Order No.:	EN/002/15
Site Location:	Brisbane Airport	Lab Name:	Eurofins
Sampled By:	Morgan Midgley		
Turnaround (Days)	5 days	BY:	
Report Format:	Please provide data in ESDAT format		

GOLDER ASSOCIATES PTY LTD
147 Coronation Drive, Milton Qld 4064
Phone: : (07) 3721 5400
Fax : (07) 3721 5401
Invoice to be sent to Accounts Aust: auaccountspayable@golder.com.au
Project Manager: K Biram
Contact Phone: 37215400
Email: MMidgley@golder.com.au

Comments/Special Instructions:

Copy results to: pscells@golder.com.au
scurti@golder.com.au

ANALYSIS REQUIRED

SAMPLE ID	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/ PRESERVATIVE		No CONTAINERS	POSSIBLE HIGH CONCENTRATION	PFAS extended suite 28 parameters	M8 8 Metals (As,Cd,Cr,Cu,Ni,Pb,Zn,Hg)
QAQC200 ✓	Water	25.10.16	9.07 am	Ice		4	U	X	X

SAMPLE MATRIX =Water SAMPLE TYPE = Discrete(DC) POSSIBLE HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid Preserved Vial; BS = Sulphuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; O = Other

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	[signature]	GOLDER	25.10.16	3.30pm
RECEIVED BY	[signature]	Eurofins	26/10/16	10:15am
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

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3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**Golder Associates Pty Ltd (Qld)**
Contact name:	Krystle-Rae Biram
Project name:	BRISBANE AIRPORT
Project ID:	1538021
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Oct 26, 2016 9:00 AM
Eurofins | mgt reference:	**521162**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 4.3 degrees Celsius.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Sample containers for volatile analysis received with zero headspace.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Ryan Gilbert on Phone : or by e.mail: RyanGilbert@eurofins.com

Results will be delivered electronically via e.mail to Krystle-Rae Biram - KBiram@golder.com.au.

APPENDIX D

Data Validation

DATA VALIDATION SUMMARY SHEET

Project Name:	**BAC Auto-Mall Precinct**	**Project Number:**	**1538021**
Primary Laboratory:	**ALS**	**Workorder Number:**	**EB1625464 (Water) and EB1624693 / EB1624749 (Soil)**
Secondary Laboratory:	**Eurofins**	**Workorder Number:**	**521162 (water) and 521151 (soil)**
Date Sampled:	**25/ October 2016 & 06-10 October 2016**	**Sample Medium:**	**Water and Soil**

Sample Information

Number of Primary Samples:	**10 (water) and 133 (soil)**	**Number of Triplicate Samples:**	**1 (water) & 2 (Soil)**
Number of Duplicate Samples:	**1 (water) and 2 (soil)**	**Number of Other QAQC Samples:**	**1 (rinsate)**

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	
All requested analysis completed?	Y	
Samples received intact and chilled?	Y	
Samples analysed within appropiate holding times?	N	Holding time exceeded for workorder EB1625464 water quality parmaters samples: AM-MW31, AM-MW14, AM-MW15, AM-MW16,AM-MW10
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?	NA	
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Rinsate		All results below LOR for workorder EB1625464 sample QAQC300
MB		No value outliers exist for workorder EB1625464, 521162, EB1624749 and EB1624693

Trip Spike Information

Analyte	Spike Concentrations	Recovery Concentration	% Recovery	Comments
				No trip spike collected.

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
Heavy Metals and Per- and Polyfluorinated Alkyl Substances (PFASs)	No outliers exist for workorder EB1625464, 521162 and EB1624693
Organochlorine Pesticides, Organophosphorus Pesticides, Polynuclear Aromatic Hydrocarbons	Outliers exist for workorder EB1624749 analyte Hexachlorobenzene (HCB), Pirimphos-ethyl, Carbophenothion, Anthracene, Fluoranthene, Chrysene failed QC

Matrix Spike (MS) Analyses

Analyte Group	Comments
Sulfate	Workorder EB1625464 anonymous sample for Sulfate: MS recovery not determined, background level greater than or equal to 4x spike level.
Perfluoroalkyl Sulfonic Acids	Workorder EB1625464 anonymous sample for Perfluorobutane sulfonic acid (PFBS), Perfluoropentane sulfonic acid (PFPeS), Perfluorohexane sulfonic acid (PFHxS) and Perfluorooctane 1763-23-1 sulfonic acid (PFOS): MS recovery not determined, background level greater than or equal to 4x spike level.
Perfluoroalkyl Carboxylic Acids	Workorder EB1625464 anonymous sample for Perfluorohexanoic acid (PFHxA): MS recovery not determined, background level greater than or equal to 4x spike level.
	For all remaining samples for workorder EB1625464 no MS outlier or frequency outliers occurred.
Total Metals & Organochlorine Pesticides	Workorder EB1624749 anonymous sample for arsenic, chromium and zinc: MS recovery not determined, background level greater than or equal to 4x spike level. Sample AM-BH14 0.25-0.5 analyte 4.4'DDT and sample anonymous, analyte mercury failed QC.
Heavy Metals and Per- and Polyfluorinated Alkyl Substances (PFASs)	No MS outlier or frequency outliers occurred for workorder 521162 and EB1624693

Laboratory Duplicates (LD) Analyses

Analyte Group	Analyte(s)	Sample ID	Comments
			For workorders EB1625464, EB1624749 and 521162 no LD outlier or frequency outliers occurred.
Total metals	Chromium	AM-BH26 0.25-0.5	For workorders EB1624693 LD outlier or frequency outliers occurred.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
Heavy Metals and Perfluorinated Compounds	AM-MW16	QAQC100	No RPD exceendances, where results are below LOR a RPD could not be calculated.
Heavy Metals and Perfluorinated Compounds	AM-BH16 0.25-0.5	QAQC001	No RPD exceendances, where results are below LOR a RPD could not be calculated.
Heavy Metals and Perfluorinated Compounds	AM-BH15 0.25-0.5	QAQC005	RPD exceeded for zinc.

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments
Perfluorinated Compounds	AM-MW16	QAQC200	RPD exceeded for Perfluorohexanesulfonic acid (PFHxS).
Heavy Metals	AM-BH16 0.25-0.5	QAQC002	No RPD exceendances, where results are below LOR a RPD could not be calculated.
	AM-BH15 0.25-0.5	QAQC006	No RPD exceendances, where results are below LOR a RPD could not be calculated.

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
		No outliers occurred for surrogate compound monitoring analyses

Overall Comments

Minor non-conformances detected in matrix spikes (MS), laboratory control spikes (LCS) and laboratory duplicates (LD) analyses are not considered to limit the use of the laboratory results.

RPD exceedances were calculated for analysis in triplicate (QAQC200) sample when compared with the primary sample (AM-MW16) and duplicate (QAQC002) sample when compared with the primary sample AM-BH16 0.25-0.5 .

This batch has been validated and is considered suitable for environmnetal interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By:	**Bianca Vanzati**	**Checked By**	**Serena Curti**
Date:	**14/11/2016**	**Date:**	**14/11/2016**

Field Duplicates (soil) RPDs

			SDG	EB1624693 - EB1624749	EB1624693 - EB1624749		EB1624693 - EB1624749	EB1624693 - EB1624749		EB1624693 - EB1624749	521162		EB1624693 - EB1624749	521162	
			Field ID	AM-BH15 0.25-0.5	QAQC005	**RPD**	AM-BH16 0.25-0.5	QAQC001	**RPD**	AM-BH15 0.25-0.5	QAQC006	**RPD**	AM-BH16 0.25-0.5	QAQC002	**RPD**
			Sampled Date	07-Oct-16	07-Oct-16		07-Oct-16	07-Oct-16		07-Oct-16	07-Oct-16		07-Oct-16	07-Oct-16	
Chem_Group	**ChemName**	**Units**	**EQL**												
PFAS	8:2 Fluorotelomer sulfonate	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.005	ND	<0.0005		
	N-Et-FOSA	mg/kg	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.01	ND	<0.0005		
	N-Et-FOSE	mg/kg	0.0005	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005			<0.0005		
	N-Me-FOSA	mg/kg	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.01	ND	<0.0005		
	N-Me-FOSE	mg/kg	0.0005	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005			<0.0005		
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001 : 0.005 (Interlab)	<0.001	<0.001	ND	<0.001	<0.001	ND	<0.001	<0.005	ND	<0.001		
	Perfluoro-n-pentanoic acid (PFPeA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	PFAS (Sum of total - Lab Reported)	mg/kg	0.0002	<0.0002	0.0004	67	<0.0002	0.0008	120	<0.0002			<0.0002		
	PFDcS	mg/kg	0.0002	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002			<0.0002		
	Sum of PFHxS and PFOS	mg/kg	0.0002	<0.0002	0.0004	67	<0.0002	0.0008	120	<0.0002			<0.0002		
	N-methyl-perfluorooctanesulfonamidoacetic acid	mg/kg	0.0002	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002			<0.0002		
	Perfluorobutanesulfonic acid (PFBS)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluorododecanoic acid (PFDoA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluorohexanesulfonic acid (PFHxS)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	0.0004	67	<0.0002	<0.005	ND	<0.0002		
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	N-ethyl-perfluorooctanesulfonamidoacetic acid	mg/kg	0.0002	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002			<0.0002		
	Perfluorooctanesulfonamide (PFOSA)	mg/kg	0.0002 : 0.01 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.01	ND	<0.0002		
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.005	ND	<0.0005		
	Perfluorooctanesulfonic acid (PFOS)3	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	0.0004	67	<0.0002	0.0004	67	<0.0002	<0.005	ND	<0.0002		
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
	Perfluoroundecanoic acid (PFUnA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
Halogenated Benzenes	Hexachlorobenzene	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	ND
Heavy Metals	Arsenic	mg/kg	5 : 2 (Interlab)	14	13	7	<5	8	46	14	17	19	<5	20	120
	Cadmium	mg/kg	1 : 0.4 (Interlab)	<1	<1	ND	<1	<1	ND	<1	<0.4	ND	<1	<0.4	ND
	Chromium	mg/kg	2 : 5 (Interlab)	41	39	5	55	54	2	41	49	18	55	53	4
	Copper	mg/kg	5	22	31	34	20	30	40	22	26	17	20	19	5
	Lead	mg/kg	5	10	17	52	6	13	74	10	13	26	6	12	67
	Mercury	mg/kg	0.1	<0.1	<0.1	ND	<0.1	<0.1	ND	<0.1	<0.1	ND	<0.1	<0.1	ND
	Nickel	mg/kg	2 : 5 (Interlab)	39	59	41	18	33	59	39	45	14	18	30	50
	Zinc	mg/kg	5	**90**	**236**	**90**	33	42	24	90	120	29	33	49	39
MAH	Benzene	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2	<0.1	ND	<0.2	<0.1	ND
	Toluene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.1	ND	<0.5	<0.1	ND
	Ethylbenzene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.1	ND	<0.5	<0.1	ND
	Xylenes (m & p)	mg/kg	0.5 : 0.2 (Interlab)	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.2	ND	<0.5	<0.2	ND
	Xylene (o)	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.1	ND	<0.5	<0.1	ND
	Xylenes (Sum of total) (Lab Reported)	mg/kg	0.5 : 0.3 (Interlab)	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.3	ND	<0.5	<0.3	ND
	Total BTEX	mg/kg	0.2	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2			<0.2		
Organochlorine Pesticides	a-BHC	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Aldrin	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Aldrin & Dieldrin (Sum of total) (Lab Reported)	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
	b-BHC	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Chlordane (Sum of total)	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.1	0	<0.05	<0.1	ND
	cis-Chlordane	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
	trans-Chlordane	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
	d-BHC	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	DDD	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	DDE	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	DDT	mg/kg	0.2 : 0.05 (Interlab)	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2	<0.05	0	<0.2	<0.05	ND
	DDT+DDE+DDD (Sum of total) (Lab Reported)	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
	Dieldrin	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endosulfan	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
	Endosulfan I	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endosulfan II	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endosulfan sulphate	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endrin	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endrin aldehyde	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Endrin ketone	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	g-BHC	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Heptachlor	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Heptachlor epoxide	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05	<0.05	0	<0.05	<0.05	ND
	Methoxychlor	mg/kg	0.2 : 0.05 (Interlab)	<0.2	<0.2	ND	<0.2	<0.2	ND	<0.2	<0.05	0	<0.2	<0.05	ND
Other	6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.01	ND	<0.0005		
	Perfluorooctanoate (PFOA)	mg/kg	0.0002 : 0.005 (Interlab)	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002	<0.005	ND	<0.0002		
PAH	Acenaphthene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Anthracene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benzo(a)pyrene TEQ (lower bound)*	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benzo(a)pyrene TEQ (medium bound)*	mg/kg	0.5	0.6	0.6	0	0.6	0.6	0	0.6	0.6	0	0.6	0.6	ND
	Benzo(a)pyrene TEQ (upper bound)*	mg/kg	0.5	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0
	Benzo(b)&(j)fluoranthene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Chrysene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Fluoranthene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Fluorene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Naphthalene	mg/kg	1 : 0.5 (Interlab)	<1	<1	ND	<1	<1	ND	<1	<0.5	ND	<1	<0.5	ND
	Naphthalene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Phenanthrene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	Pyrene	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
	PAH (Sum of Common 16 PAHs - Lab Reported)	mg/kg	0.5	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND	<0.5	<0.5	ND
Perfluorinated Compounds	10:2 Fluorotelomer sulfonic acid	mg/kg	0.0005	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005			<0.0005		
	4:2 Fluorotelomer sulfonic acid	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	ND	<0.0005	<0.0005	ND	<0.0005	<0.005	ND	<0.0005		
	Perfluoroheptane sulfonic acid	mg/kg	0.0002	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002			<0.0002		
	Perfluoropentane sulfonic acid	mg/kg	0.0002	<0.0002	<0.0002	ND	<0.0002	<0.0002	ND	<0.0002			<0.0002		
Pesticides-Others	Demeton-s-methyl	mg/kg	0.05	<0.05	<0.05	ND	<0.05	<0.05	ND	<0.05			<0.05		
Total Petroleum Hydrocarbons	TRH C6 - C9 Fraction	mg/kg	10 : 20 (Interlab)	<10	<10	ND	<10	<10	ND	<10	<20	ND	<10	<20	ND
	TRH C10 - C14 Fraction	mg/kg	50 : 20 (Interlab)	<50	<50	ND	<50	<50	ND	<50	<20	ND	<50	<20	ND
	TRH C15 - C28 Fraction	mg/kg	100 : 50 (Interlab)	<100	<100	ND	<100	<100	ND	<100	<50	ND	<100	<50	ND
	TRH C29 - C36 Fraction	mg/kg	100 : 50 (Interlab)	<100	<100	ND	<100	<100	ND	<100	<50	ND	<100	<50	ND
	TRH+C10 - C36 (Sum of total) (Lab Reported)	mg/kg	50	<50	<50	ND	<50	<50	ND	<50	<50	ND	<50	<50	ND
	TRH+C10 - C40 (Sum of total) (Lab Reported)	mg/kg	50	<50	<50	ND	<50	<50	ND	<50			<50		
	TRH C6 - C10 Fraction F1	mg/kg	10 : 20 (Interlab)	<10	<10	ND	<10	<10	ND	<10	<20	ND	<10	<20	ND
	TRH C6 - C10 Fraction Less BTEX F1	mg/kg	10 : 20 (Interlab)	<10	<10	ND	<10	<10	ND	<10	<20	ND	<10	<20	ND
	TRH >C10 - C16 Fraction F2	mg/kg	50	<50	<50	ND	<50	<50	ND	<50	<50	ND	<50	<50	ND
	TRH >C10 - C12 Fraction Less Naphthalene F2	mg/kg	50	<50	<50	ND	<50	<50	ND	<50			<50		
	TRH >C16 - C34 Fraction F3	mg/kg	100	<100	<100	ND	<100	<100	ND	<100	<100	ND	<100	<100	ND
	TRH >C34 - C40 Fraction F4	mg/kg	100	<100	<100	ND	<100	<100	ND	<100	<100	ND	<100	<100	ND

Legend

ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)

- = Not analysed/calculated

Acceptable RPDs:

RPD <= 30%

RPD > 30%, Analyis result < 10 times LOR

RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

Field Duplicates (water) RPDs

			Lab Report Number	EB1625464	EB1625464		EB1625464	521162	
			Field ID	AM-MW16	QAQC100	**RPD**	AM-MW16	QAQC200	**RPD**
			Sampled Date	25/10/2016	25/10/2016		25/10/2016	25/10/2016	
Chem_Group	**ChemName**	**Units**	**EQL**						
PFAS	10:2 Fluorotelomer sulfonic acid	µg/L	0.005	<0.005	<0.005	0	<0.005		
	4:2 Fluorotelomer sulfonic acid	µg/L	0.005 : 0.01 (Interlab)	<0.005	<0.005	ND	<0.005	<0.01	ND
	8:2 Fluorotelomer sulfonate	µg/L	0.005 : 0.01 (Interlab)	<0.005	<0.005	ND	<0.005	<0.01	ND
	N-Et-FOSA	µg/L	0.005 : 0.05 (Interlab)	<0.005	<0.005	ND	<0.005	<0.05	ND
	N-Et-FOSE	µg/L	0.005	<0.005	<0.005	ND	<0.005		
	N-Me-FOSA	µg/L	0.005 : 0.05 (Interlab)	<0.005	<0.005	ND	<0.005	<0.05	ND
	N-Me-FOSE	µg/L	0.005	<0.005	<0.005	ND	<0.005		
	Perfluorobutanoic acid (PFBA)	µg/L	0.01 : 0.05 (Interlab)	<0.01	<0.01	ND	<0.01	<0.05	ND
	Perfluoroheptane sulfonic acid	µg/L	0.002	0.002	<0.002	0	0.002		
	Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.002 : 0.01 (Interlab)	0.005	0.005	0	0.005	<0.01	0
	Perfluoropentane sulfonic acid	µg/L	0.002	0.029	0.029	0	0.029		
	PFAS (Sum of total - Lab Reported)	µg/L	0.002	0.431	0.422	2	0.431		
	PFDcS	µg/L	0.002	<0.002	<0.002	ND	<0.002		
	Sum of PFHxS and PFOS	µg/L	0.002	0.314	0.314	0	0.314		
	N-methyl-perfluorooctanesulfonamidoacetic acid	µg/L	0.002	<0.002	<0.002	ND	<0.002		
	Perfluorobutanesulfonic acid (PFBS)	µg/L	0.002 : 0.01 (Interlab)	0.037	0.036	3	0.037	0.02	60
	Perfluorodecanoic acid (PFDA)	µg/L	0.002 : 0.01 (Interlab)	<0.002	<0.002	ND	<0.002	<0.01	ND
	Perfluorododecanoic acid (PFDoA)	µg/L	0.002 : 0.01 (Interlab)	<0.002	<0.002	ND	<0.002	<0.01	ND
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.002 : 0.01 (Interlab)	0.005	0.005	0	0.005	<0.01	0
	Perfluorooctanesulfonic acid (PFOS)3	µg/L	0.002 : 0.01 (Interlab)	0.021	0.023	9	0.021	0.04	62
	Perfluorooctanoate (PFOA)	µg/L	0.002 : 0.01 (Interlab)	0.016	0.011	37	0.016	0.02	22
	Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.002 : 0.01 (Interlab)	0.293	0.291	1	**0.293**	**0.12**	**84**
	Perfluorononanoic acid (PFNA)	µg/L	0.002 : 0.01 (Interlab)	<0.002	<0.002	ND	<0.002	<0.01	ND
	Perfluorohexanoic acid (PFHxA)	µg/L	0.002 : 0.01 (Interlab)	0.023	0.022	4	0.023	0.05	74
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.005 : 0.05 (Interlab)	<0.005	<0.005	ND	<0.005	<0.05	ND
	N-ethyl-perfluorooctanesulfonamidoacetic acid	µg/L	0.002	<0.002	<0.002	ND	<0.002		
	Perfluorooctanesulfonamide (PFOSA)	µg/L	0.002 : 0.05 (Interlab)	<0.002	<0.002	ND	<0.002	<0.05	ND
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005 : 0.01 (Interlab)	<0.005	<0.005	ND	<0.005	<0.01	ND
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002 : 0.01 (Interlab)	<0.002	<0.002	ND	<0.002	<0.01	ND
	Perfluoroundecanoic acid (PFUnA)	µg/L	0.002 : 0.01 (Interlab)	<0.002	<0.002	ND	<0.002	<0.01	ND
Heavy Metals	Arsenic (Filtered)	mg/l	0.001	0.004	0.004	0	0.004	0.005	0
	Cadmium (Filtered)	mg/l	0.0001	<0.0001	<0.0001	ND	<0.0001	0.0002	0
	Chromium (Filtered)	mg/l	0.001	<0.001	<0.001	ND	<0.001	<0.001	ND
	Copper (Filtered)	mg/l	0.001	<0.001	<0.001	ND	<0.001	<0.001	ND
	Lead (Filtered)	mg/l	0.001	<0.001	<0.001	ND	<0.001	<0.001	ND
	Mercury (Filtered)	mg/l	0.0001	<0.0001	<0.0001	ND	<0.0001	<0.0001	ND
	Nickel (Filtered)	mg/l	0.001	0.032	0.032	0	0.032	0.031	0
	Zinc (Filtered)	mg/l	0.005	0.118	0.12	2	0.118	0.12	2

Legend

ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR)

- = Not analysed/calculated

Acceptable RPDs: RPD <= 30%

RPD > 30%, Analyis result < 10 times LOR

RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

Field Blanks (water): Rinsate

Lab Report Number	EB1625464
Field ID	QAQC300
Sampled Date	25-Oct-16
Sample Type	Rinsate

Chem Group	Chemical Name	Units	EQL	
Heavy Metals	Aluminium (Filtered)	mg/l	0.01	
	Arsenic (Filtered)	mg/l	0.001	<0.001
	Cadmium (Filtered)	mg/l	0.0001	<0.0001
	Chromium (Filtered)	mg/l	0.001	<0.001
	Copper (Filtered)	mg/L	0.001	<0.001
	Iron (Filtered)	mg/l	0.05	
	Lead (Filtered)	mg/L	0.001	<0.001
	Mercury (Filtered)	mg/l	0.0001	<0.0001
	Nickel (Filtered)	mg/l	0.001	<0.001
	Zinc (Filtered)	mg/l	0.005	<0.005
Perfluorinated Compounds	10:2 Fluorotelomer sulfonic acid	µg/L	0.005	<0.005
	4:2 Fluorotelomer sulfonic acid	µg/L	0.005	<0.005
	8:2 Fluorotelomer sulfonate	µg/L	0.005	<0.005
	N-Et-FOSA	µg/L	0.005	<0.005
	N-Et-FOSE	µg/L	0.005	<0.005
	N-Me-FOSA	µg/L	0.005	<0.005
	N-Me-FOSE	µg/L	0.005	<0.005
	Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.01
	Perfluoroheptane sulfonic acid	µg/L	0.002	<0.002
	Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.002	<0.002
	Perfluoropentane sulfonic acid	µg/L	0.002	<0.002
	PFAS (Sum of total - Lab Reported)	µg/L	0.002	<0.002
	PFDcS	µg/L	0.002	<0.002
	Sum of PFHxS and PFOS	µg/L	0.002	<0.002
	N-methyl-perfluorooctanesulfonamidoacetic acid	µg/L	0.002	<0.002
	Perfluorobutanesulfonic acid (PFBS)	µg/L	0.002	<0.002
	Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.002
	Perfluorododecanoic acid (PFDoA)	µg/L	0.002	<0.002
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.002
	Perfluorooctanesulfonic acid (PFOS)3	µg/L	0.002	<0.002
	Perfluorooctanoate (PFOA)	µg/L	0.002	<0.002
	Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.002	<0.002
	Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.002
	Perfluorohexanoic acid (PFHxA)	µg/L	0.002	<0.002
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.005	<0.005
	N-ethyl-perfluorooctanesulfonamidoacetic acid	µg/L	0.002	<0.002
	Perfluorooctanesulfonamide (PFOSA)	µg/L	0.002	<0.002
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.005
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.002
	Perfluoroundecanoic acid (PFUnA)	µg/L	0.002	<0.002

APPENDIX E

95% UCL calculations

BAC Auto Mall Stage 2
1538021

95% Upper Confidence Level $_{Average}$ Calculation For Nickel

Parameter	*Normal Distribution*	*Lognormal Distribution*	*Recommended Distribution*	*Units*
Analyte threshold	45	45	**45**	mg/kg
$UCL_{average}$	45.56	52.47	**45.56**	mg/kg
No. of samples	14	14	**14**	
Mean	34.64	28.66	**34.64**	mg/kg
Estimated Mean	34.64	35.37	**34.64**	mg/kg
Standard deviation	23.07	1.89	**23.07**	mg/kg
Distribution	-	-	**normal**	

Distribution Test Summary Using Coeffiecient Of Variation
Distribution test result - normal

The statistical analysis indicates that there is a 95% probability
that the arithmetic average concentration of the contamination
will not exceed 45.5622 mg/kg

Data Entered By: Serena Curti

Date: 14/11/2016

Checked By: Andrew Howes

Date: 15/11/2016

References: VIC EPA, *Industrial Waste Resource Guidelines - Soil Sampling, June 2009*
Gilbert, R.O., 1987, *Statistical Methods For Environmental Pollution Monitoring* ,
Van Nostrand Reinhold, New York

Note: Where the laboratory reported a result below the method detection limit, a value equal to half the detection limit was substituted for the purposes of statistical calculation.
Gilbert (1987) also indicates that this is common practice on pages 177 to 178 of the text.

BAC Auto Mall Stage 2
1538021

95% Upper Confidence Level $_{Average}$ Calculation For Zinc

Parameter	*Normal Distribution*	*Lognormal Distribution*	*Recommended Distribution*	*Units*
Analyte threshold	45	45	**45**	mg/kg
$UCL_{average}$	87.98	82.66	**87.98**	mg/kg
No. of samples	14	14	**14**	
Mean	62.36	52.03	**62.36**	mg/kg
Estimated Mean	62.36	60.83	**62.36**	mg/kg
Standard deviation	54.14	1.71	**54.14**	mg/kg
Distribution	-	-	**normal**	

Distribution Test Summary Using Coeffiecient Of Variation
Distribution test result - normal

The statistical analysis indicates that there is a 95% probability
that the arithmetic average concentration of the contamination
will not exceed 87.9825 mg/kg

Data Entered By: Serena Curti

Date: 14/11/2016

Checked By: Andrew Howes

Date: 15/11/2016

References: VIC EPA, *Industrial Waste Resource Guidelines - Soil Sampling, June 2009*
Gilbert, R.O., 1987, *Statistical Methods For Environmental Pollution Monitoring* ,
Van Nostrand Reinhold, New York

Note: Where the laboratory reported a result below the method detection limit, a value equal to half the detection limit was substituted for the purposes of statistical calculation.
Gilbert (1987) also indicates that this is common practice on pages 177 to 178 of the text.

APPENDIX F

Important Information Relating to This Report

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Appendix F
Acid Sulfate Soil Management Plan

30 June 2017

PROPOSED AUTO MALL PRECINCT

Acid Sulfate Soil Management Plan

MANAGEMENT PLAN

Submitted to:
Mr Peter Boyle
Brisbane Airport Corporation
PO Box 61
Hamilton Central Q 4007

Report Number. 1664971-001-R-Rev4

Distribution:

1 electronic copy

Record of Issue

Company	Client Contact	Version	Date Issued	Method of Delivery
Brisbane Airport Corporation	Peter Boyle	Rev.0	6 June 2017	Email
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Brisbane Airport Corporation	Peter Boyle	Rev.4	30 June 2017	Email

Record of Review

Author	Report Reviewer	Project Manager	Revision Version
Hannah Groves/ Serena Curti	Paul Scells	Krystle-Rae Biram	Rev.0
Serena Curti	Paul Scells	Krystle-Rae Biram	Rev.1
Serena Curti	Paul Scells	Krystle-Rae Biram	Rev.2
Serena Curti	Paul Scells	Krystle-Rae Biram	Rev.3
Serena Curti	Paul Scells	Krystle-Rae Biram	Rev.4

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Important Information

1.0 INTRODUCTION

This Acid Sulfate Soil Management Plan (ASSMP) has been developed by Golder Associates Pty Ltd (Golder) on request by Brisbane Airport Corporation (BAC) for earthworks and future infrastructure works associated with the proposed Auto Mall Precinct at Brisbane Airport.

The proposed Auto Mall Precinct development is situated on an area between Moreton Drive, Nancy Bird Way and Airport Drive at the Brisbane Airport in Queensland (site, **Figure 1**).

Acid Sulfate Soil (ASS) is a general term applying to both a soil horizon that contains sulfides (i.e. Potential Acid Sulfate Soil - PASS) and an acid soil horizon affected by oxidation of sulfides (i.e. Actual Acid Sulfate Soil - AASS). ASS may be peats, silts, clays, or sands.

This ASSMP references the results of ASS testing undertaken by Golder during combined groundwater, contamination and ASS investigations completed at the site in February 2015 (Golder 2015), December 2015 (Golder 2016A) and October 2016 (Golder 2016B and 2016C), which targeted assessment of materials to be excavated as part of the construction of the proposed Auto Mall Precinct development.

The Procedures contained within this ASSMP should be updated and revised to address conditions encountered that vary from those indicated by investigations or where alternative construction methodologies are adopted.

The ASSMP was prepared with consideration of the following documents:

- Office of Legislative Drafting Attorney-General's Department, *Airports (Environment Protection) Regulations 1997* (AEPR 1997 guidelines).
- *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines V4.0,* 2014. Dear, S-E., Ahern, C. R., O'Brien, L. E., Dobos, S. K., McElnea, A. E., Moore, N. G. & Watling, K. M. Department of Science, Information Technology, Innovation and the Arts, Queensland Government;
- *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland*, 1998; Ahern, CR., Ahern, M.R. and Powell;
- State Planning Policy, April 2016
- State Planning Policy – state interest guideline, Water quality April 2016
- Environmental Protection Act 1994;
- Environmental Protection Policy (Water) 2009; and
- *Queensland Water Quality Guidelines* 2009, as amended in 2013 (QWQG 2009), which provides an overarching framework for the management of waters (including groundwater) under the Environmental Protection Act 1994.

2.0 OBJECTIVES

The objective of the ASSMP is to mitigate or control potential impacts relating to the disturbance of acid sulfate soil and groundwater during earthworks.

3.0 PROJECT OVERVIEW

The proposed project site covers an area of approximately 51.3 hectares, currently heavily vegetated with casuarina forest and mangroves. The existing surface level is at approximately RL 2.4-2.5 m AD[1]. An unlined drain currently cuts the north-eastern corner of the site. An Energex electrical substation and associated cables easement cuts the site in two, as illustrated in **Figure 1**. The first phase of the project involves vegetation clearing, ground improvement works, filling and surcharge to develop the raw land.

Three land development stages are proposed as illustrated in the Staging Plan in **Appendix A** and described below:

- Development Stage 1: Track, roads and selected development lots; lots north of the Energex easement between the track and Moreton Drive, and the Track and Nancy Bird Way.
- Development Stage 2: development lots south of the Energex easement.
- Development Stage 3: development lots north of the Energex easement between the track and Airport Drive.

Excavations below the existing (predevelopment) ground surface is anticipated to be mainly limited to perimeter drains and flood storages as illustrated in the Excavated Extents Layout Plan showing areas to be excavated below 2.5m AD in **Appendix A**. It is understood the excavation of the perimeter drains and flood storage areas channel will be undertaken in stages. It is understood that tidal waters will be prevented from entering the perimeter drains by temporary bunding during the earthworks construction phase and ultimately by permanent tidal flaps installed during the future infrastructure development.

The construction works with the potential to disturb ASS include the following:

- Excavation of perimeter drains, with invert levels (IL) ranging from 0.2 m AD to 2.4 m AD.
  - Excavated materials will be ASS and will require management/treatment.
  - ASS will be exposed in the walls and base of the drains. This may will result in minor flushes of acid into perimeter drain and the subsequent stripping and mobilisation of metals.
  - The drains will intercept the water table, and may result in acid and metals impacted groundwater discharge into the drain and requiring mitigation/management.
- Surcharge with imported material, to an assumed a maximum of 9.5 m AD will consolidate soft soils underlying this site and result in settlement of existing ground surface by up to 1.5 m. Settlement will result in AASS materials being “pushed” below the current water table. This will result in the release of acid to the groundwater and the subsequent stripping and mobilisation of metals.
  - Acid and metals impacted groundwater may migrate offsite and discharge into the perimeter drains (if constructed prior to surcharging) surrounding the site. Mitigation/management of this issue will be required.
  - Acid and metals impacted groundwater is also likely to be extracted from wick drains installed under surcharged areas. Water generated by wick drains is predominantly expected to captured/stored within the overlying drainage blanket and surcharge. Water/seepage from the drainage blanket may need to be managed/treated.

However, the site will be isolated from external drains during construction.

It is understood that the rate placement of fill and surcharge materials is not expected to exceed about 1.5m per month. The groundwater monitoring regime adopted in this ASSMP is based on this expected rate of filling. This should be reviewed in higher rates of fill/surcharge placement are proposed.

[1] Aerodrome Datum

Final site levels after settlement will range from about 3.75 to 4.25 m AD.

Ultimately the project involves the construction of a multi-purpose auto hub including retail, a conference centre, hotels and other commercial areas built around a test track. Private roads will be located around the perimeter of the proposed track site.

4.0 SITE SETTINGS

4.1 Topography

The proposed site was historically a low lying plain drained by several channels. At the time of the ASS investigations in 2015 and 2016, portions of the site had been filled with dredged sand, though with a limited thickness of 0.05 to 0.7 m. The predevelopment surface levels are in the 2.4-2.5 m AD range.

4.2 Hydrology

An open drain cuts through the north-eastern corner of the site. Offsite, Landers Pocket drain is the closest surface water body feature, located about 100 m west of the project area beyond Moreton Drive.

Surface water in Landers Pocket drain flows north east for about 1 km from the site before discharging into Kedron Brook Floodway Drain, eventually discharging into Kedron Brook. The ultimate receiving environment of surface water from Kedron Brook is Moreton Bay.

Upon completion, the proposed perimeter drains will flow towards either end of the site and will result in discharges into Landers Pocket drain and subsequently Kedron Brook. During construction, these drains will be isolated from external drains.

4.3 Geology

The 1:100,000 scale Brisbane Geological map (1990) indicates that the site contains recent alluvial deposits of Holocene age of ‘undifferentiated coastal plains’, comprising mud and sand deposits. Local experience indicates that the site is underlain by Upper Holocene-age alluvia overlying Lower Holocene-age alluvia, with a relict Pleistocene alluvial land surface below. Residual soils and rock are present below the alluvia.

Holocene alluvial deposits are typically associated with ASS formation.

5.0 OVERVIEW OF EXISTING CONDITIONS

This section provides an overview of the existing acid sulfate soil conditions identified at the site during the investigations. Investigation locations are shown on attached **Figure 1**.

5.1 Groundwater Quality

Groundwater quality sampling has been conducted at fifteen monitoring well locations previously installed across the site (see **Figure 1**) to provide a 'snapshot' of the baseline groundwater conditions.

The following ground water conditions were indicated:

- Stabilised groundwater levels were measured in the completed monitoring wells ranging from 0.87 to 2.13 m AD. Based on the measured groundwater levels across the whole site, the flow direction beneath the site was interpreted to be towards the west.
- The field pH results (pH 4.30 to pH 6.99) indicated that the groundwater was acidic to near neutral. The lowest pH levels occurred in wells along the western site boundary.
- Electrical conductivity (EC) values were recorded ranging from 9 mS/cm to 51 mS/cm indicating brackish to saline water conditions;
- The buffering capacity of the wells varied across the site:
  - The groundwater at the northern end of site had very high alkalinity with a Class 1 buffering capacity (i.e. adequate to maintain acceptable pH level in the future). The central portion of site had a moderate alkalinity with a Class 3 buffering capacity (i.e. inadequate to maintain stable, acceptable pH level in areas vulnerable to acidification) apart from monitoring well BIP/MW1 on the western boundary where acidic groundwater with a Class 5 buffering capacity (i.e. unacceptable pH level under all circumstances) was encountered. The conditions at BIP/MW1 are likely to indicate historical disturbance (ASS dewatering) in this area.
  - Groundwater at the southern end of the site had a very low, Class 4 buffering capacity (i.e. inadequate to maintain stable, acceptable pH level in areas vulnerable to acidification);
- Dissolved aluminium concentrations of greater than about 1 mg/L in groundwater may be an indicator of AASS. Concentrations where above 1 mg/L at AM-MW01 (3.59 mg/L) and BIP/MW1 (8.18 mg/L), indicating active ASS impact in groundwater in those areas. These concentrations were also above the AEPR accepted limits for contamination of fresh water of 0.1 mg/L (no guidelines are available for marine water);
- Dissolved iron concentrations ranged from <0.05 to 294 mg/L;
- The Chloride to Sulfate (Cl^-: SO_4^{++}) ratios generally indicate past oxidation of PASS across the site.

Overall the groundwater results suggest a variable or historically disturbed environment.

5.2 Ground Conditions

5.2.1 General

Golder previously conducted a desktop assessment of ASS, groundwater and contamination for the future Auto Mall Precinct in 2015 (Golder 2015) and acid sulfate soil investigations for Stage 1 and Stage 2 of the future Auto Mall Precinct in 2016 (Golder 2016A, 2016B and 2016C). The findings of the desktop assessments and acid sulfate soil investigations are summarised in the following sections.

5.2.2 Subsurface conditions

Sub-surface conditions typically comprise the following:

- **Fill** – A desiccated layer of fill generally comprising loose silty sand and sandy clay, extending up to 1.0 m bgl (2.1 m AD). This layer is more predominant in the central and northern portions of the site and is absent at the southern end of site. ASS field screening and laboratory test results indicated that the fill materials are AASS.

- **Younger Alluvium (Holocene)** – This alluvium comprises variable light, medium and heavy clays and clayey sands, with some thin layers of peat and 'clean' sands. The natural soils were generally grey to dark grey and dark brown, indicative of ASS. ASS field screening and laboratory test results indicated the presence of AASS materials in alluvium from the ground surface to a depths of approximately 0.3 m AD to -0.63 m AD. PASS materials underlie this to at least the maximum depth investigated -0.68 m AD.

5.2.3 Liming Rates

Lime treatment rates have been calculated based on the 'net acidity' and are presented in **Table 1** below.

Liming rates have been calculated in kg of lime/m³ using a factor of safety and fineness of 1.5 and an assumed bulk density of 1.8 t/m³.

Liming rates are presented in **Table 1** for the perimeter drain alignment, and **Table 2** for the flood storages. The Drain Area naming is as per OPUS Excavated Extents Layout Plan in **Appendix A** and illustrated in Appendix B, Figure A1.

Table 1: Lime Treatment Rates – Perimeter Drains

Drain Area	Treatment Rate (Maximum)
Moreton Drive North Channel 1	150 kg lime/m³
Moreton Drive North Channel 2	62 kg lime/m³
Moreton Drive South Channel	14 kg lime/m³
Nancy Bird Channel	50 kg lime/m³
Airport Drive North Channel 1	320 kg lime/m³
Airport Drive North Channel 2	120 kg lime/m³
Airport Drive South Channel	19 kg lime/m³

Table 2: Lime Treatment Rates – Flood Storages

Flood Storage Area	Treatment Rate (Maximum)
Moreton Drive Basin[2]	14 kg lime/m³
Airport Drive Basin[2]	19 kg lime/m³
Northern Storage Channel	120 kg lime/m³

[2] No ASS investigation are located within the proposed basin footprints, liming rates are derived nearest section of perimeter drain. Liming rates for materials from these areas should be confirmed prior to treatment.

Lime treatment rates have been calculated based on the maximum 'net acidity' rates and include a safety factor of 1.5, these maximum treatment rates can be immediately adopted for neutralisation treatment of the appropriate materials without further laboratory testing. However, due to the significant variation observed in the range of calculated liming rates within the designated materials, further testing and characterisation of 500 m^3 "lots" of excavated material could be undertaken prior to treatment site to determine specific liming rates. This could significantly reduce the quantities of lime required for treatment.

6.0 POTENTIAL ENVIRONMENTAL IMPACTS

Potential environmental impacts associated with ASS disturbance during the bulk earthworks and future infrastructure construction phase across Stages 1 to 3 of the future Auto Mall Precinct development are summarised below in **Table 3** along with the environmental risk and management strategies to mitigate the risk.

Table 3: Potential Environmental Impacts

Activity	Issue	Risk to the Environment	Mitigation Strategies
Surcharge	Offsite migration of acid and metals impacted groundwater.	Groundwater beneath the site is generally acidic with minimal or no buffering capacity. Surcharging will result in settlement and cause displacement of existing AASS materials below the water table. This will allow additional release of acid to the groundwater. Without management, the acidic groundwater represents a moderate to high level of risk to concrete structures and a high level of risk to surface water systems (where groundwater discharges into such systems).	Staged construction of a lime cut-off trench along the western, southern and eastern boundaries prior to commencement of filling/surcharging within 50 m of the end of the installed trench until fully completed. (Suitable buffering capacity is present in groundwater along the northern boundary). Monitoring of groundwater quality near the site boundaries. Monitoring frequency based on a fill/surcharging rate of up to 1.5m vertical height per month. Isolation of drains from external discharge.
	Extraction of acidic and metals impacted groundwater by wick drains	Water generated by wick drains is predominantly expected to captured/stored within the overlying drainage blanket and surcharge. Small volumes of water may seep from the drainage blanket. Without management acidic seepage could be discharged to surface water drains may result in metals flocculation and low oxygen levels if acid is buffered in the drain. There is potentially a moderate risk to the environment if appropriate management measures are not implemented.	Placement of a 10 m wide strip of surface lime 'guard layer' under the perimeter of each surcharge stage prior to placement of the drainage blanket, where wick drains are installed. This is to neutralise acidic seepage resulting from wick drains. Isolation of drains from external discharge.
Excavation of the perimeter drains and flood storages (post surcharging)	Acid formation and release from excavated AASS and/or PASS	For the volume and acid generating potential of ASS to be excavated, these works fall into the Extra High Level of Treatment Category (Category XH under the Queensland ASS Management Guideline). There is a potentially high risk to the environment if appropriate management measures are not implemented.	Short term stockpiling of excavated materials to be limited outside of treatment locations for each earthworks stage. Excavated ASS materials to be managed by placed across nominated section of fill/surcharge platform and neutralised by lime treatment within 48 hours of excavation. Treatment validation testing and detailed Closure Report to be prepared.

	Discharge of acidic groundwater into constructed perimeter drains.	Release of existing acidic groundwater into excavated drains may result in metals flocculation and low oxygen levels as acid is buffered. Additionally construction of drains below the existing water table may temporarily expose *in situ* PASS resulting in minor generation of additional acid. There is a high risk to the environment if appropriate management not implemented.	Construction of the drain in stages sections to monitor and treat groundwater discharges. Incorporation of lime into the walls and base of the drain. Higher lime application rates along the western site boundary to buffer acidic groundwater. (Refer Tables 1 & 2)

6.1.1 Summary of ASS Management Requirements

Provided the proposed ASS management procedures are effectively implemented and monitored throughout the development earthworks, it is considered that there should be limited internal or external ASS environmental impacts attributable to soils with existing or potential acidity or acidic groundwater.

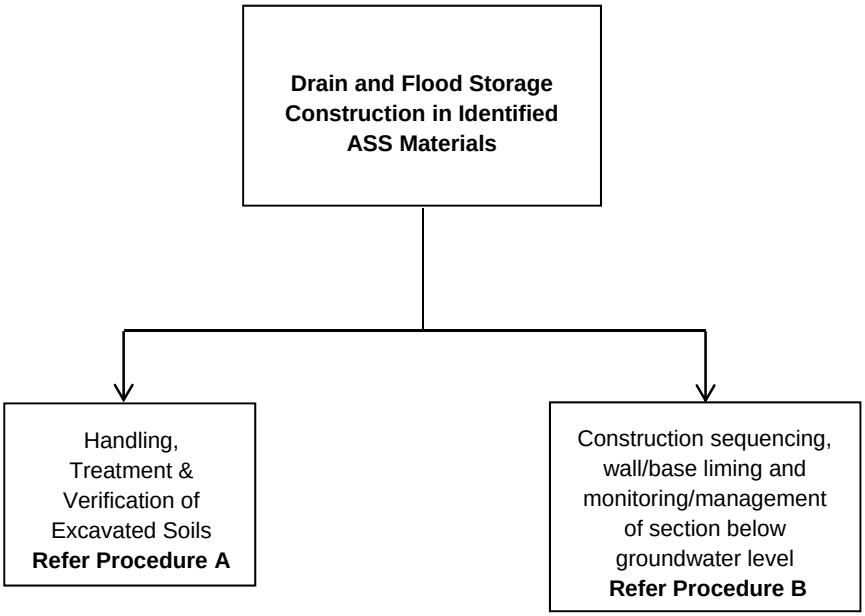
The relevant issues, which are of significance when considering existing and potential acidity management for this development, are:

- Neutralisation of excavated ASS material;
- Mobilisation of acid and/or metals from AASS into groundwater due to surcharge;
- Movement of acidic groundwater into waterways;
- Management of acidic seepage from wick drains.

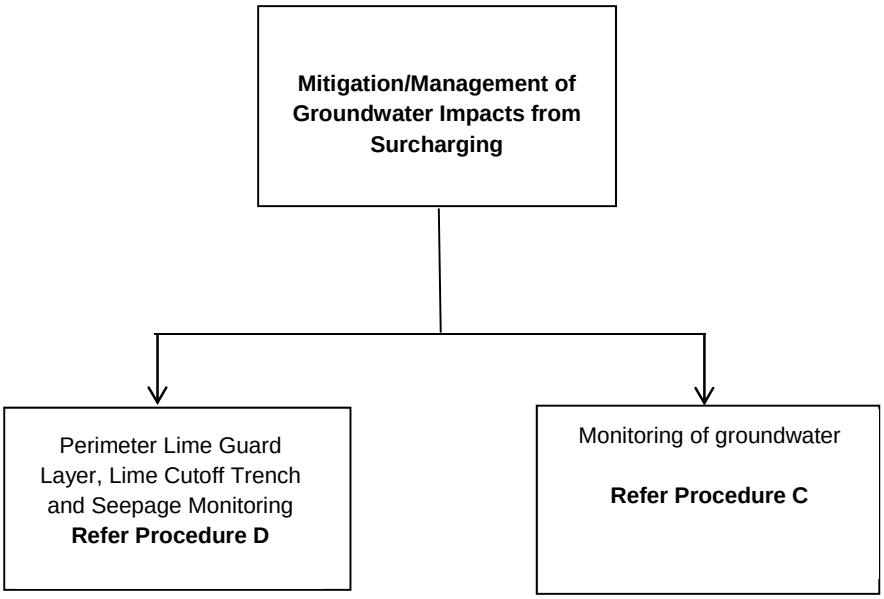
7.0 MANAGEMENT PROCEDURES

The flow chart below summarises the management of materials expected to be encountered at this site. Management Procedures are presented in **APPENDIX B**.

ASS MANAGEMENT – FLOW CHART, DRAIN AND FLOOD STORAGE EXCAVATION WORKS



ASS MANAGEMENT – FLOW CHART, SURCHARGE WORKS



The management procedures required to address the potential ASS issues associated with the bulk earthworks and future infrastructure construction works are presented in **APPENDIX B**, and comprise the following:

- **Procedure A**: Handling, treatment and verification of ASS.
- **Procedure B**: Unlined Drain/Flood Storage Area Construction.
- **Procedure C**: Groundwater Monitoring
- **Procedure D**: Fill Placement Works.

8.0 RESPONSIBILITIES

This section outlines the responsibilities to manage, document and report on ASS issues for the project.

- The *Site Manager* is responsible for ensuring that all requirements of the ASSMP are met during the project.
- The *Site Supervisor* is responsible for ensuring the strategies and procedures prescribed in the ASSMP are implemented at the site in accordance with the specified performance criteria.
- The BAC *Environmental Coordinator* is responsible for reviewing compliance with the ASSMP, to address non-conformance and approval of mitigation actions.
- All other site personnel are responsible for implementing strategies and procedures prescribed in the ASSMP, as applicable to their work activities.

9.0 NON-CONFORMANCE AND CORRECTIVE ACTION

Any non-conformance to the ASSMP must be addressed as soon as is practical. The personnel responsible for the non-conformance must be notified immediately for purposes of issuing rectification instructions.

10.0 ASSMP COMPLIANCE MONITORING

The BAC Environmental Coordinator will monitor site activities on a regular basis, as required, and advise non-conformances and approve mitigation actions.

The compliance monitoring shall take the form of visual inspections of the works and treatment locations and associated control measures and a review of monitoring data.

11.0 COMMUNITY RELATIONS

Concerns are raised by the community (or other parties) in relation to ASS will be directed to the BAC Environmental Coordinator.

The BAC Environmental Coordinator shall maintain a register recording the following information:

1) Details: Name, address and phone number of party raising the concern.
2) Nature of concern: Detail of issue, date of incident, people involved, and location.
3) Action taken or required if complaint of concern verified: Any action proposed or undertaken to address the concern, including time and date.
4) Response to action: Was the complainant satisfied with the outcome of the actions taken, if not, what else needs to be done, or is it outside the scope of the development works.
5) Prevention or re-occurrence: What action has been taken by the nominated responsible person to ensure the problem will not re-occur.

12.0 TRAINING

All site staff, either for the bulk earthwork phase or the future infrastructure phase, will be required to undergo a site induction covering elements of the ASSMP relevant to their activities. The induction will aim to instil environmental awareness in personnel and:

- Introduce and explain the duty of care required under the *Environmental Protection Act 1994.*
- Introduce the ASSMP and responsibilities it places on all contractors and consultants.
- Explain the various subordinate components of the ASSMP and the reporting and monitoring procedures of the ASSMP and how they work.
- Explain how to use the environmental procedures and plans in the ASSMP.

The content of the induction program will be endorsed and presented by the Site Manager, or delegate.

13.0 IMPORTANT INFORMATION

Your attention is drawn to the document - “Important Information Relating to this Report”, which is in **APPENDIX C** of this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be, and to present you with recommendations on how to minimise the risks associated with the services provided for this project. The document is not intended to reduce the level of responsibility accepted by Golder Associates, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

14.0 REFERENCES

- Golder 2015A. *Proposed Auto Precinct, Brisbane Airport. ASS and Groundwater Review* (report number 1416490-002-R-Rev0) February 2015
- Golder 2016A. *Proposed Auto Mall Stage 1 ASS Report* (report number 1538021-005-R-RevA), February 2016.
- Golder 2016B. *Proposed Auto Mall Precinct Stage 2 Acid Sulfate Soil Assessment* (report number 1538021-012-R-Rev0), November 2016.
- Golder 2016C. *Proposed Auto Mall Precinct Stage 1 Acid Sulfate Soil Assessment* (report number 1538021-014-R-Rev1), December 2016.

Report Signature Page

GOLDER ASSOCIATES PTY LTD

Serena Curti	Paul Scells
Senior Environmental Engineer	Principal Environmental Engineer

SC/PS/rm

A.B.N. 64 006 107 857

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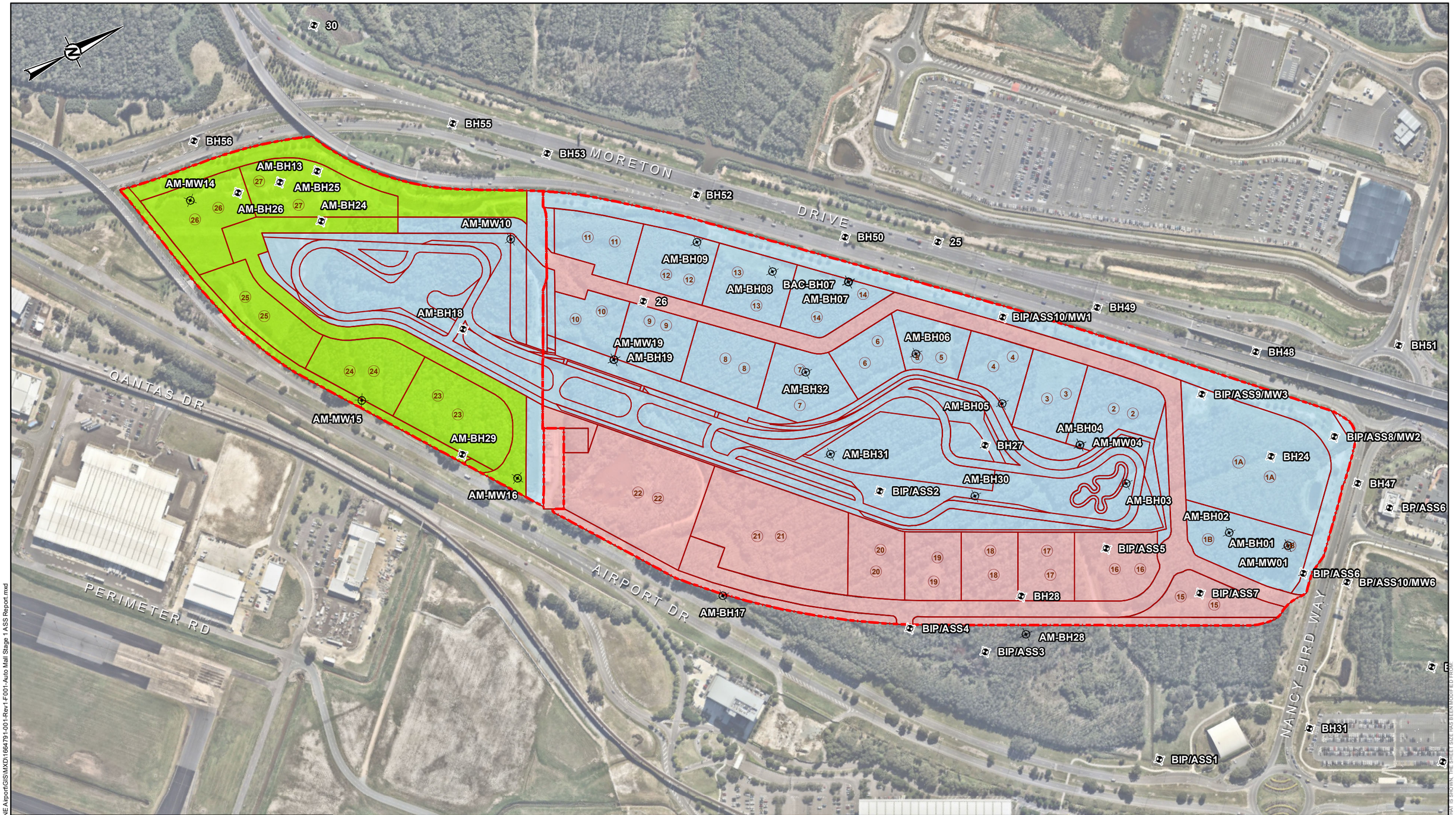
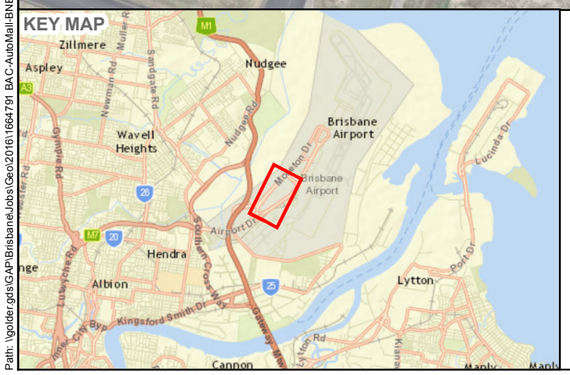
FIGURE

Investigation Locations





LEGEND

- Acid Sulfate Soils Borehole
- Monitoring Well / ASS Borehole
- Site Boundary
- BAC Auto Precinct Layout (BRIS0012 SK-026) 24/08/2016
- Indicative Stage 1
- Indicative Stage 2
- Indicative Stage 3

NOTES

1. AERIAL PHOTOGRAPHY SUPPLIED BY NEARMAP LTD, DATED OCTOBER 2014
2. DEVELOPMENT YIELD PLAN LAYOUT SUPPLIED BY BAC AS CAD FILE 'BRIS0012 SK-004[E] DEVELOPMENT YIELD PLAN.PDF.DWG'
3. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P CORP., NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI (THAILAND), MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

0 100 200 300 metres

REFERENCE SCALE: 1:4,500 (AT A3)
PROJECTION: GDA 1994 MGA ZONE 56

CLIENT
BRISBANE AIRPORT CORPORATION

PROJECT
PROPOSED AUTO PRECINCT

TITLE
PROPOSED DEVELOPMENT WITH ASS INVESTIGATION LOCATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-06-26
PREPARED	HG
DESIGN	DP
REVIEW	MS
APPROVED	MS

PROJECT No.	CONTROL	Rev.	FIGURE
1664791	001	1	1

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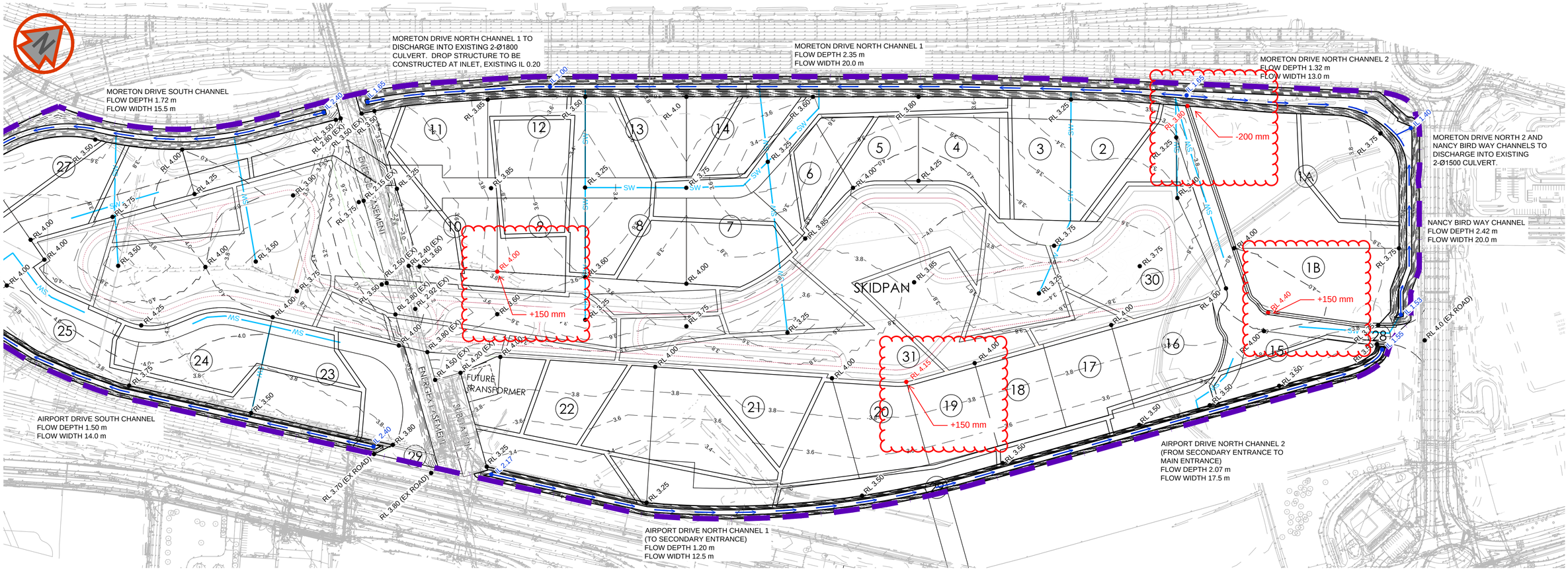
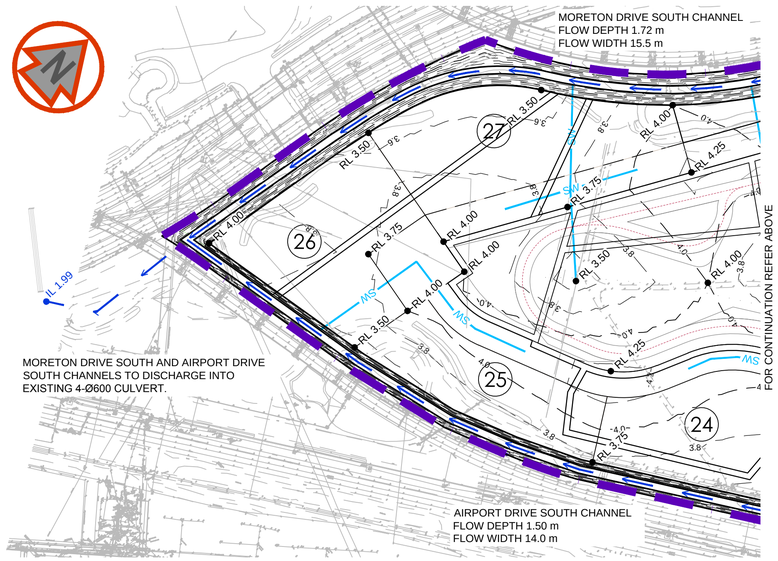
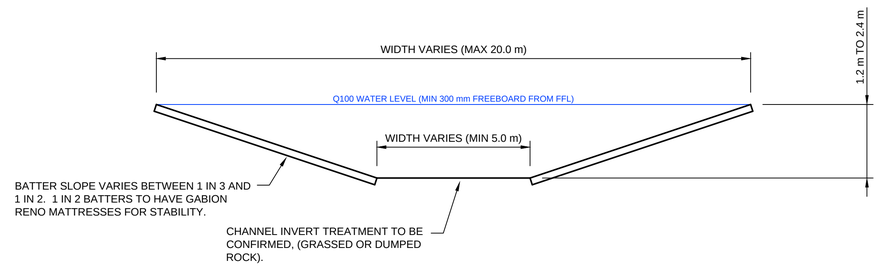
APPENDIX A

Preliminary Design Drawings – Future Auto Mall







TYPICAL DRAINAGE CHANNEL SECTION

OPUS SKETCH FOR AMENDED FINISHED SURFACE LEVELS 12/05/2017

PRELIMINARY

Revision	Amendment	Approved	Revision Date
A	PRELIMINARY ISSUE	SRN	2016-09-02
B	REVISED LAYOUT CHANGES	SRN	2016-09-09

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Designed	Approved	Approved Date
J LUTWYCHE	S NOVAK	

Drawn	Scales
J LUTWYCHE	1:2000 (A1), 1:4000 (A3)

Project
BRISBANE AIRPORT CORPORATION
AUTO MALL PRECINCT

Sheet
FINISHED SITE GRADING AND DRAINAGE LAYOUT PLAN

Project No.	Sheet. No.	Revision
Q-B4176.00	SK08	B

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1:4000 @ A3
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RPEQ Number:

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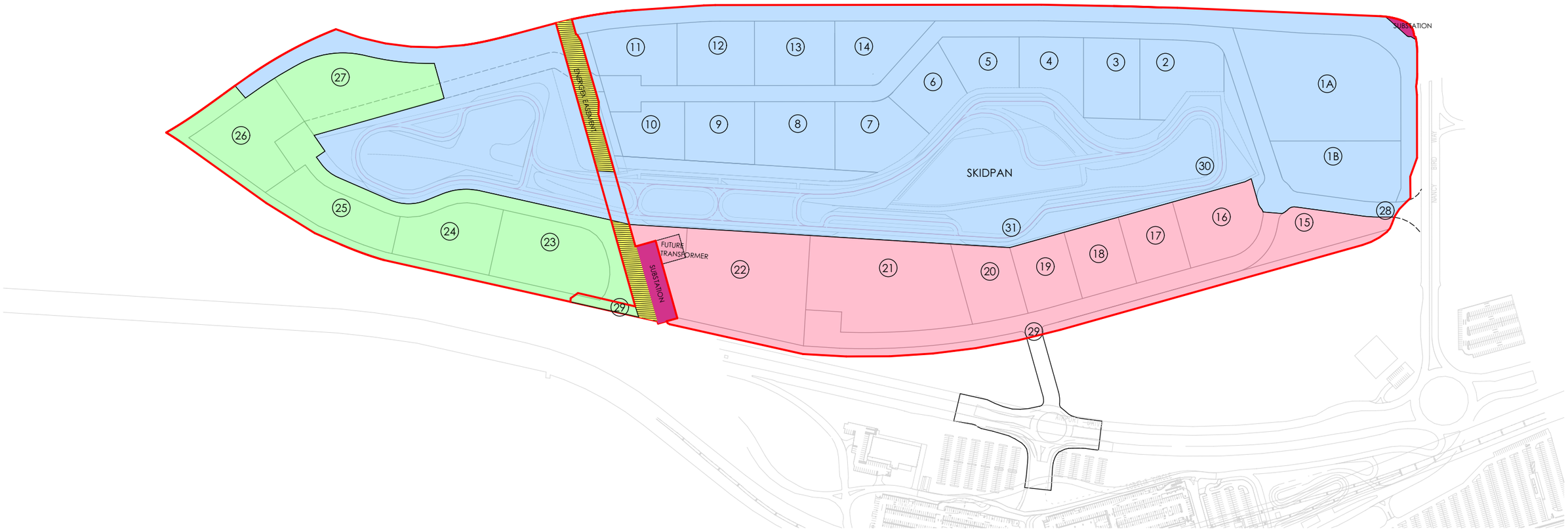

INDICATIVE STAGE ONE

INDICATIVE STAGE TWO

INDICATIVE STAGE THREE

BAC

BAC DRIVER EXPERIENCE CENTRE

STAGING PLAN

MLDesign

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© ML Design Pty Ltd Last saved: thomasw_MLD on 23/08/2016
ACN 602 370 810 Plot Date: 23/08/2016
ABN 93 602 370 810 File Path: P:\BRIS0012_BAC Commercial Business Strategy\B_Documentation\B1_Production\B1_Drawings\ArchiCAD\Layouts\BRIS0012_LayoutAC18.pln

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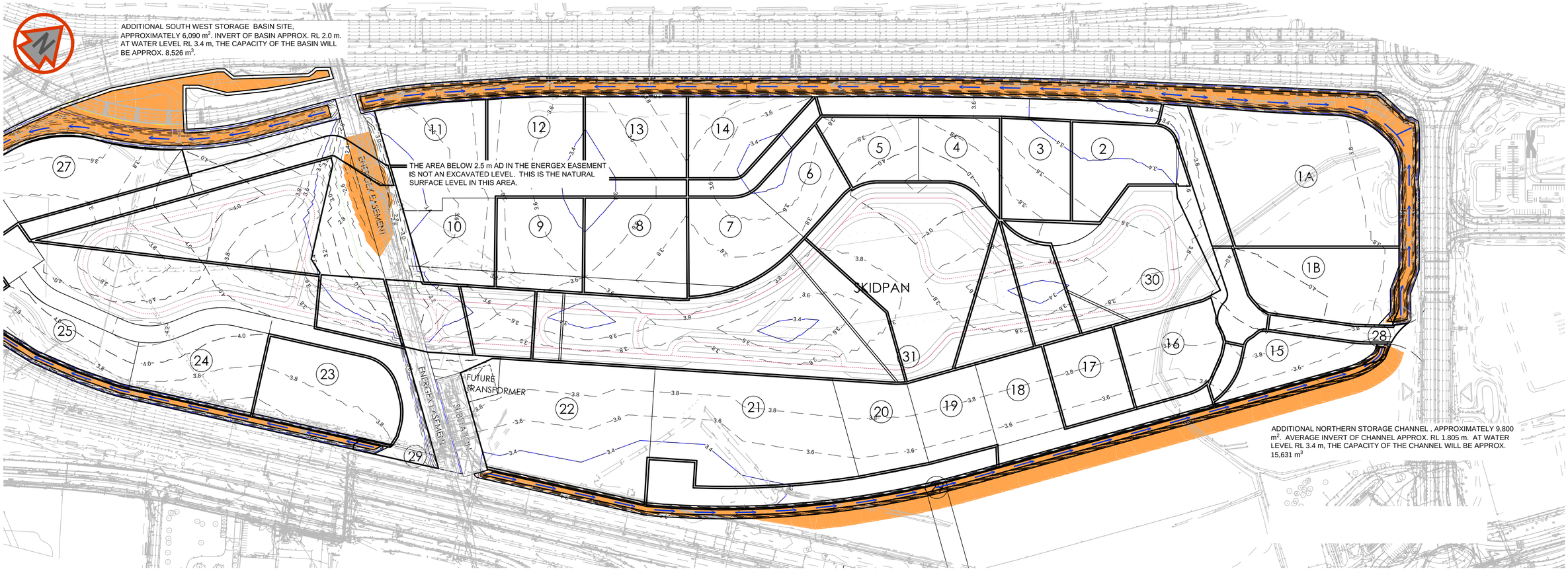

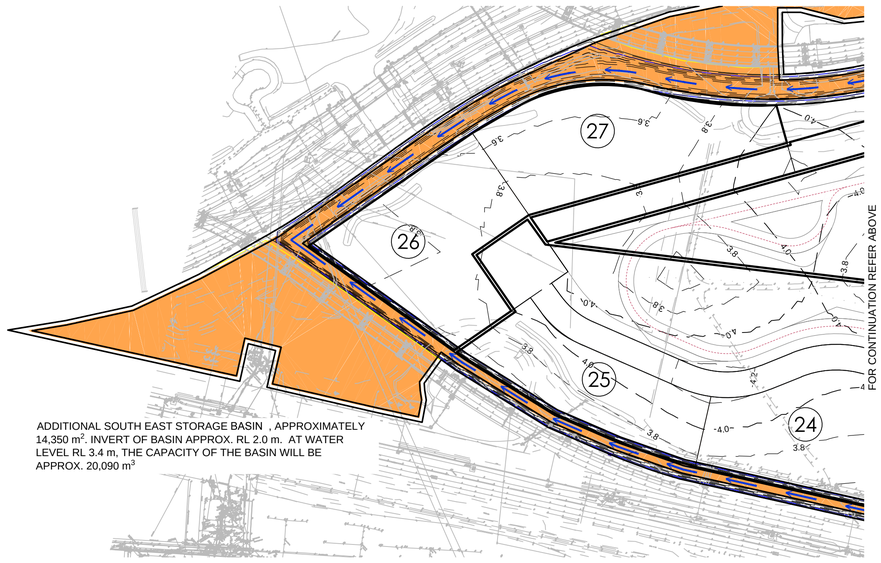

LEGEND

EXCAVATION EXTENTS BELOW RL 2.5 m AD

PRELIMINARY

Revision	Amendment	Approved	Revision Date
A	PRELIMINARY ISSUE	SRN	2017-06-30

OPUS
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Designed	Approved	Approved Date
J LUTWYCHE	S NOVAK	
Drawn	**Scales**	
J LUTWYCHE	1:2000 (A1), 1:4000 (A3)	

Project
BRISBANE AIRPORT CORPORATION
AUTO MALL PRECINCT

Sheet
EXCAVATION EXTENTS
LAYOUT PLAN

Project No.	Sheet. No.	Revision
Q-B4176.00	SK13	A

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Original Sheet Size A1 [841x594] Plot Date ---- Path G:\Projects - Current\Q-B4176 - Brisbane Airport Corporation Pty Ltd\Q-B4176.00 - BAC Auto Mall\Deliver Civil\Q-B4176.00_SK13.dwg Layout1

APPENDIX B

ASS Management Procedures

A1. GENERAL

The procedures outlined below are provided for the handling and on-site treatment and verification of excavated ASS materials.

A2. OBJECTIVES

- Appropriately treat and manage excavated ASS materials so as to minimise adverse effects on the natural and built environment (including infrastructure).
- Comply with conditions of licences, permits or other approvals issued for the project.

A3. STATUTORY REQUIREMENTS AND GUIDELINES

1) *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines V4.0, 2014. Dear, S-E., Ahern, C. R., O'Brien, L. E., Dobos, S. K., McElnea, A. E., Moore, N. G. & Watling, K. M. Department of Science, Information Technology, Innovation and the Arts, Queensland Government;*
2) *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland, 1998; Ahern, CR., Ahern, M.R. and Powell;*
3) *Environmental Protection Act 1994;*
4) *Environmental Protection Policy (Water) 2009*

A4. HANDLING AND STORAGE MEASURES

A4 (a) Stockpiling of ASS

Stockpiling of excavated and untreated ASS materials outside of managed bunded areas shall not be permitted beyond:

- 18 hours for sands and clayey sands
- 24 hours for clays

Beyond these periods, untreated ASS must be stockpiled within a managed bunded area. Runoff collected in the bunded stockpile areas shall be monitored and treated where required as described as described for impounded waters in Procedure B.

A4 (b) Transport of ASS

If ASS materials excavated from below the water table are to be transported on roads external to the site, they shall be drained prior to transportation to treatment locations(s) and/or the tailgates of trucks shall be sealed to prevent spillage and leakage during transportation. The transport route between the excavation and onsite treatment locations shall be inspected on a daily basis and any spillages >0.5 m^3 shall be collected and moved to the treatment locations.

A4 (b) Materials Tracking

An ASS tracking strategy shall be developed for each earthworks stage to ensure that the origin (depth and location) of excavated ASS is identifiable at the treatment location. The materials tracking should also extend to treatment and verification requirements described in Section A5.

A5. TREATMENT MEASURES

A5 (a) Treatment Locations

Excavated ASS materials are to be treated and reused on the Project site as fill/surcharge. Treatment locations for each earthworks stage shall meet the following requirements:

- A guard layer of fine ground agricultural lime shall be applied to the treatment locations prior to placement of soils at a rate 5 kg/m^2 for each 1 m height of soil to be treated.
- Excavated ASS materials shall be placed in layers at identifiable earthworks “lots” at the treatment location and following the materials tracking plan (developed for Section A4(b)).
- The overall layer thickness shall not exceed 250 mm thickness unless effective treatment over a greater thickness can be demonstrated.
- Fine ground agricultural lime (or other approved neutralising agent) shall be applied to the surface of the placed material at the applicable rate (see Section A5(b)) using a spreader truck or other approved method. Following lime application, the lime shall be mixed into the ASS layer using mechanical methods (disc plough, rotary hoe, etc).
- Given the nature of the proposed works, verification samples shall be collected from each layer of treated material for earthworks lots of up to 500 m^3 in size or part thereof.
- Following collection of verification samples, the layer of treated material will be compacted to form part of the fill/platform. Additional layers of excavated ASS may be progressively placed, treated, verified and compacted over preceding layers.
- Where required, drying shall be enhanced by mechanical methods (rotary hoe, disc plough, etc) to create a relatively homogenous, friable material prior to addition of lime for neutralisation.

Where the planned excavation and treatment of a layer cannot be completed within a 48 hour period, the following additional measures shall apply:

- The treatment locations shall be prepared to ensure that surface runoff from untreated materials is contained on site.
- Runoff collected shall be monitored and treated where required as described for impounded waters in Procedure B.

A5 (b) Liming Rate

The ASS treatment rates based on the use of fine ground agricultural lime are presented in **Tables A5a** and **A5b** below. These treatment rates are also marked on **Figure A1.**

Table A5a: Lime Treatment Rates – Perimeter Drains

Area	Treatment Rate
Moreton Drive North Channel 1	150 kg lime/m^3
Moreton Drive North Channel 2	62 kg lime/m^3
Moreton Drive South Channel	14 kg lime/m^3
Nancy Bird Channel	50 kg lime/m^3

Airport Drive North Channel 1	320 kg lime/m³
Airport Drive North Channel 2	120 kg lime/m³
Airport Drive South Channel	19 kg lime/m³

Table A5b: Lime Treatment Rates – Flood Storages

Flood Storage Area	Treatment Rate
Moreton Drive Basin[1]	14 kg lime/m³
Airport Drive Basin[1]	19 kg lime/m³
Northern Storage Channel	120 kg lime/m³

Alternatively, liming rates for each treatment lot may be determined by additional sampling and Chromium Suite analysis. The liming rate required to neutralise the Net Acidity (Existing Acidity + Potential Acidity) shall be calculated by:

- Multiplying Net Acidity (calculated in kg/tonne) by a safety factor of 1.5 to allow for mixing deficiencies and poor reactivity of the lime;
- Multiplying the above result by the bulk density of the soil to arrive at the liming rate (kg/m³).
- Multiplying the above result by 1.03 (to account for an agricultural lime neutralising value of 97%).
- Calculating surface application rate (kg/m²) by multiplying the above result by the thickness of soil being treated.

Treatment rates for alternative neutralising agents should be determined based on a laboratory derived neutralising value.

A5 (c) Verification Testing

Verification samples shall be collected for each layer of treated material for earthworks lots of up to 500 m³ or part thereof in size. The samples shall be formed by compositing materials from three randomly selected locations across the layer of treated soil. Samples shall be collected over the full thickness of the treated soil. Chromium Suite analysis shall be conducted on each sample to confirm net acidity by Acid Base Accounting. The result will provide ultimate confirmation that the adopted measures are satisfactory.

[1] No ASS investigation are located within the proposed basin footprints, liming rates are derived nearest section of perimeter drain. Liming rates for materials from these areas should be confirmed prior to treatment.

A6. PERFORMANCE CRITERIA

To confirm adequate lime treatment, laboratory testing must demonstrate the following:

- A neutralising capacity of more than 1.5 times the sum of existing plus potential acidity, all measured in the same units.

Some individual samples may vary from these criteria, as outlined below:

- No single sample shall exceed a net acidity of 18 mol H+/tonne (0.03% S); **and**
- If any single sample has a net acidity between 0 and 18 mol H+/tonne (0.00 to 0.03% S), then the average of any four spatially adjacent samples (including the exceeding sample) shall have an average net acidity of zero or less.

A7. CONTINGENGY MEASURES

Additional lime treatment and further verification testing shall be conducted where adequate neutralisation is not initially indicated.

A8. PERFORMANCE INDICATORS

Item	Performance Indicator
ASS tracking strategy	■ An appropriate strategy has been prepared to track the movement and treatment of ASS
ASS treatment	■ Treatment procedure employed is in accordance with Section A5
Liming rates	■ Correct liming rates are applied for each 500 m^3 of excavated materials.
Treatment verification	■ Verification of treatment on each layer for each 500 m^3 “earthworks lot”. ■ Correct verification laboratory analysis used. ■ If verification shows performance criteria in section A6 are not met, additional treatment has been employed.
Non conformance	■ All non-conformances are reported and rectified.

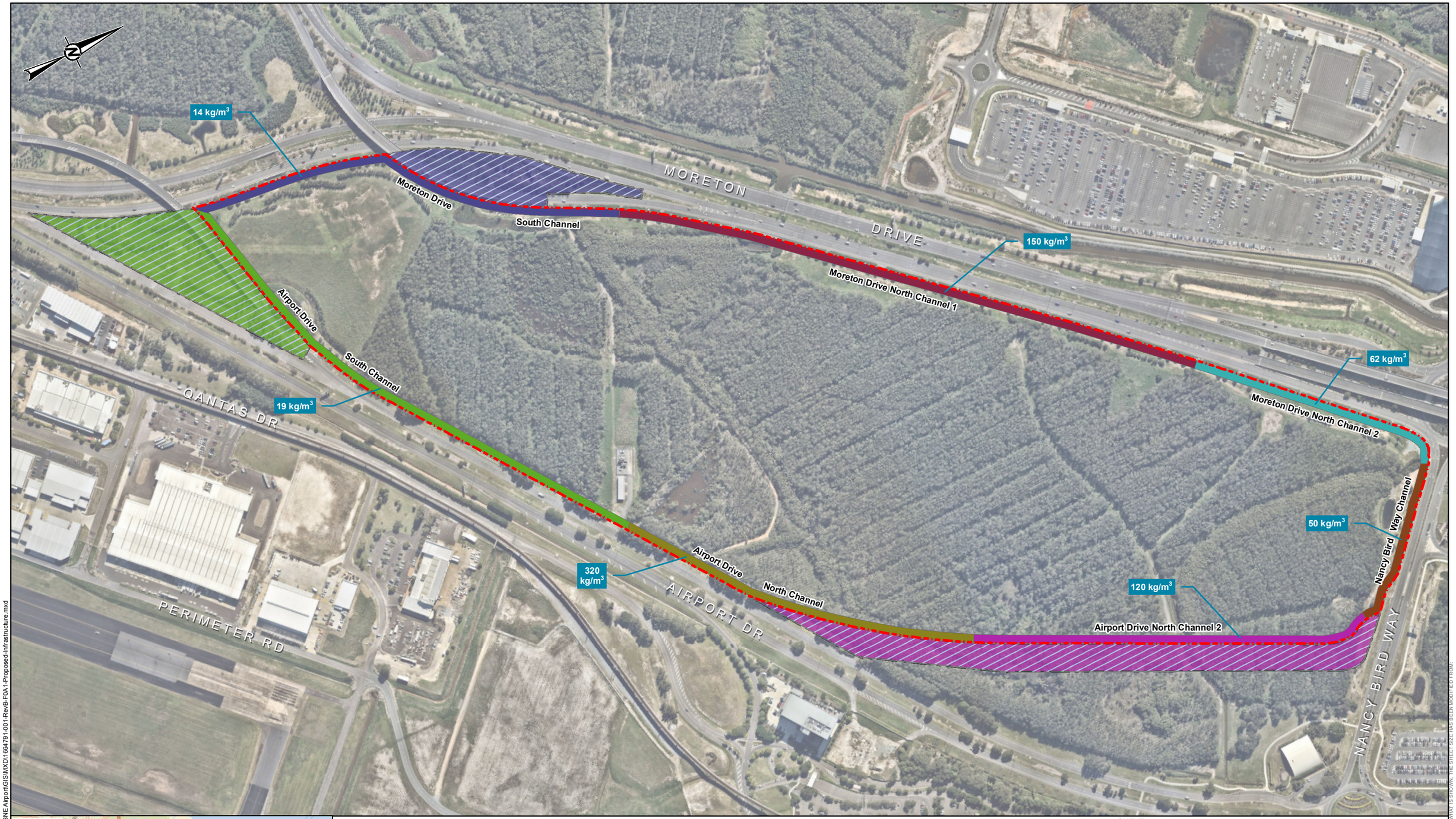
A9. MONITORING AND REPORTING

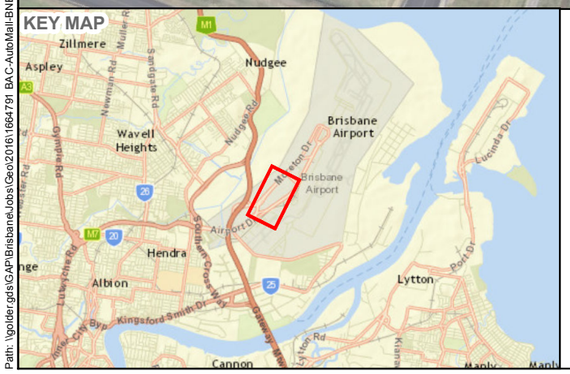
Records shall be kept to track excavated ASS materials, periods of stockpiling, volumes transported and placed in each treated layer and treatment rates applied.

The Site Manager shall be responsible for ensuring lime neutralisation and verification tests are completed for each layer of treated material for earthworks lots of up to 500 m^3 of excavated ASS.

The Site Manager shall maintain a register of testing results and a record of inspections.

A summary report of all test results and inspections shall be complied by the Site Manager each week and submitted to the BAC Environmental Coordinator.





LEGEND

Site Boundary

Drain Spoil (Indicative) Liming Rate

- 14 kg/m³
- 19 kg/m³
- 50 kg/m³
- 62 kg/m³
- 120 kg/m³
- 150 kg/m³
- 320 kg/m³

Flood Storage Basins Spoil (Indicative) Liming Rate (for materials excvated below 2.5m AD)

- 14 kg/m³
- 19 kg/m³
- 120 kg/m³

NOTES

1. AERIAL PHOTOGRAPHY SUPPLIED BY NEARMAP LTD, DATED OCTOBER 2014
2. DEVELOPMENT YIELD PLAN LAYOUT SUPPLIED BY BAC AS CAD FILE 'BRIS0012 SK-004[E] DEVELOPMENT YIELD PLAN.PDF.DWG'
3. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, DELORME, USGS, INTERMAP, INCREMENT P CORP., NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI (THAILAND), MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

0 100 200 300 metres

REFERENCE SCALE: 1:4,500 (AT A3)
PROJECTION: GDA 1994 MGA ZONE 56

CLIENT
BRISBANE AIRPORT CORPORATION

PROJECT
AUTO PRECINCT

TITLE
DRAIN AND FLOOD STORAGE SPOIL LIMING RATES FOR EXCAVATED MATERIALS BELOW 2.5m AD

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-06-27
PREPARED	HG
DESIGN	DP
REVIEW	MS
APPROVED	MS

PROJECT No.	CONTROL	Rev.	FIGURE
1664791	001	1	A1

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B1. GENERAL

The procedures outlined below are provided to manage and monitor ASS impacts associated with construction of temporary and permanent drain or flood storage areas excavations below the existing water table.

B2. OBJECTIVES

- Manage excavations to minimise the extent of insitu PASS that may be drained during excavation.
- Provide neutralising source for acidic groundwater discharge into completed drains/flood storage.
- Appropriately monitor and treat water in sections of drains/flood storage constructed below the groundwater level, prior to reconnection to existing waterways.
- Comply with conditions of licences, permits or other approvals issued for the project.

B3. STATUTORY REQUIREMENTS AND GUIDELINES

1) *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines V4.0, 2014. Dear, S-E., Ahern, C. R., O'Brien, L. E., Dobos, S. K., McElnea, A. E., Moore, N. G. & Watling, K. M. Department of Science, Information Technology, Innovation and the Arts, Queensland Government;*
2) Environmental Protection Act 1994;
3) Environmental Protection Policy (Water) 2009.

B4. IMPLEMENTATION MEASURES

The following procedures shall apply to permanent excavations (such as unlined drains) constructed below the existing groundwater level:

B4 (a) Drain/Flood Storage Excavations

- Excavated materials to be managed as per Procedure A.
- Conduct excavations offline of existing creeks and drains.
- For excavations below the groundwater table, limit the period of time that walls and base of excavations are exposed to air to minimize the formation of acid. Given the relatively moderate to high Net Acidity in materials below the water table, where possible program excavations in sections to be open for not more than 5 days (and preferably not more than 2.5 days) prior to allowing groundwater re-enter the completed drain.

B4 (b) Liming

- Spread fine ground agricultural lime at the following rates and kneaded into the soil surface using a small “sheepsfoot” type roller or other approved methodology:
  - Moreton Bay Drive North Channel 1 and 2
    - Eastern wall of drain from 2.5 m AD to base of drain, application rate minimum 5 kg/m^2.
    - Remainder of drain (western walls below 2.5 m AD and base), application rate minimum 2 kg/m^2.
  - Remaining Channels – Walls below 2.5 m AD and bases, application rate minimum 2 kg/m^2.

  The above areas are marked on Figure B1. This should be conducted prior allowing groundwater to re-enter the drain in sections where excavations have been conducted below the groundwater table.
- The Contractor is to provide evidence to BAC Environmental Coordinator of the installation of the minimum liming rates.

B4 (c) Groundwater Seepage into Completed Drain Sections

In drain sections where excavation has been conducted below groundwater table, the following management additional measures shall be adopted on completion of drain construction:

- pH and aluminum levels (as a minimum) are to be monitored once groundwater seepage has resulted in a stable water level in the completed section of drain. Where this impounded water is found to have a pH of less than 6.0, the excavation is to be drained following pH adjustment/treatment of impounded water and additional lime added to base and walls. Water levels in the drain will again be allowed to stabilse and further monitoring is to be conducted. Where pH remains below 6, additional mitigation measures (such as lime trenches) are to be assessed and implemented.
- Any impounded waters to be removed from the completed drain must be disposed of to land surface or soakage area within the proposed Auto Mall precinct.
- Where treatment of water in drains causes metals to flocculate, this precipitate is to be removed from the drain prior to allowing groundwater to re-enter the drain. Precipitated metals must be disposed of at a licensed landfill.
- pH adjustment/treatment of impounded waters must be carried out prior to release/reconnection to existing waterways.

Performance indicators and response actions for groundwater seepage into completed drain sections are listed in Table B5a.

It is noted that the site is to be isolated from external drains during earth works construction.

B4 (d) Rain Event Monitoring During Construction

Following rain events of more than 20mm, temporary perimeter drains shall be inspected on the next business day. Where surface water is observed, the following management measures will be adopted:

- pH will be measured in each area where surface water is observed. Where this water is found to have a pH of less than 6.0, the pH will be adjusted by addition of hydrated lime, liquid caustic (or other approved neutralizing agent) to achieve a pH of between 6.5 and 8.5.
- pH adjustment/treatment of waters within temporary drains must be carried out prior to release/reconnection to existing waterways.

Performance indicators and response actions where water is observed in temporary perimeter drains are listed in Table B5b. It is noted that temporary perimeter drains are to be isolated from external drains during earth works construction.

Where a rain event causes a breach of site containment bunds, turbidity monitoring of the stormwater discharge is required. Monitoring shall be conducted of water discharging from the breach and in Landers Pocket Drain, downstream of the site, at the location shown on Figure B1. Performance indicators and response actions are listed in Table B5c.

B5. PERFORMANCE INDICATORS

Table B5a: Water Quality in Drains and Storage Basins

Parameter		Monitoring Frequency	Performance Indicator	Action (after performance indicator exceedance)
Field Measurement	pH	Prior to reconnection to existing drains/waterways	>6 pH units	Treat water and remove (with discharge to land/soakage trench), Re-lime walls and base.
	Aluminium (indicator strip)		<1mg/L	
	total alkalinity		-	

Table B5b: Rain Event - Water Quality in Temporary Perimeter Drains

Parameter		Monitoring Frequency	Performance Indicator	Action (after performance indicator exceedance)
Field Measurement	pH	When water is observed in drains following a 20mm rain event	>6 pH units	Treat water and allow to soak away or remove and discharge to land.

Table B5c: Rain Event - Water Quality Following Containment Breach

Parameter		Monitoring Frequency	Performance Indicator	Action (after performance indicator exceedance)
Field Measurement	Turbidity	If a rainfall event causes breach of site containment	<60 NTU Or <10% of receiving environment turbidity	Repair breach and employ additional control measures confirmed by BAC Environmental Coordinator

Table B5d: Other Performance Indicators

Item	Performance Indicator
Liming of Drain Walls and Base	■ Correct lime application rates are applied as per Section B4(b)
Non conformance	■ All non-conformances are reported and rectified.

B6. MONITORING & REPORTING

The Site Manager shall be responsible for ensuring works and monitoring listed in Section B4 is conducted at the required frequency.

The Site Manager shall maintain a register of lime application (including a photographic record), water testing results and a record of inspections.

A summary report of all test results and inspections shall be compiled by the Site Manager each week and submitted to BAC Environmental Coordinator.

The Site Manager shall inform the BAC Environmental Coordinator of non-compliance with Tables B5a to B5d upon detection. The BAC Environmental Coordinator shall instigate an assessment of the impact within 2 days of such detections.

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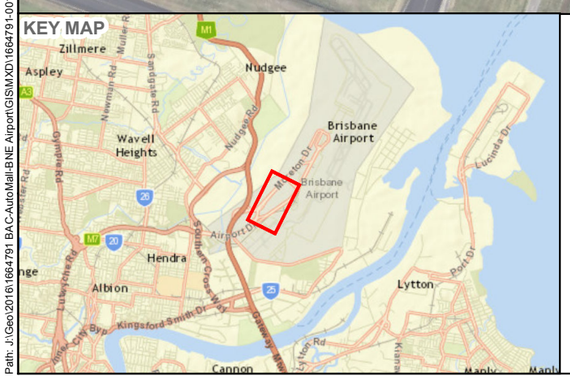

LEGEND

Site Boundary

Liming Rates for Base of Drains and Flood Storage and Walls Below 2.5mAD

- 2 kg/m³
- 5 kg/m³
- 2 kg/m³

Nominal Surface Water Monitoring Location in Landers Pocket Drain - actual location to be confirmed following site inpsection for access.

NOTES

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0 100 200 300 metres

REFERENCE SCALE: 1:4,500 (AT A3)
PROJECTION: GDA 1994 MGA ZONE 56

CLIENT
BRISBANE AIRPORT CORPORATION

PROJECT
AUTO PRECINCT

TITLE
LIMING RATES FOR BASE AND WALLS OF COMPLETED DRAINS/FLOOD STORAGE AREAS

CONSULTANT

Golder Associates

YYYY-MM-DD	2017-06-27
PREPARED	HG
DESIGN	DP
REVIEW	MS
APPROVED	MS

PROJECT No.	CONTROL	Rev.	FIGURE
1664791	001	1	**B1**

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C1. GENERAL

The procedure outlined below is provided to monitor groundwater quality around each stage of surcharge earthworks.

C2. OBJECTIVES

- Appropriately monitor groundwater to identify water quality changes that may indicate ASS impact.
- Comply with conditions of licences, permits or other approvals issued for the project.

C3. STATUTORY REQUIREMENTS AND GUIDELINES

1) *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines V4.0,* 2014. Dear, S-E., Ahern, C. R., O'Brien, L. E., Dobos, S. K., McElnea, A. E., Moore, N. G. & Watling, K. M. Department of Science, Information Technology, Innovation and the Arts, Queensland Government;
2) Environmental Protection Act 1994;
3) Environmental Protection Policy (Water) 2009.

C4. IMPLEMENTATION MEASURES

C4 (a) Location of Monitoring Wells

- A series of monitoring wells shall be installed progressively around each earthworks stage prior to the commencement of any site filling with each stage. For larger stages where filling progresses in sub-stages, wells can be installed progressively as long as baseline monitoring can be completed prior to commencement of sub-stage filling activities.
- Groundwater monitoring wells shall be installed at a distance of not more than 50m from the toe of fill platforms for each stage.
- Wells located along site boundaries shall be installed beyond the outer edge of the proposed perimeter drain or flood storage.
- Internal wells shall be progressively decommissioned as each encroaching earthworks stage progresses.
- Wells must extend at a level of at least -0m AD.
- Nominal groundwater wells locations for each earthworks stage are marked on Figure C1. Actual well locations shall be selected in consultation with BAC Environmental Coordinator.

C4 (b) Baseline Monitoring

The following baseline groundwater monitoring program shall be adopted in monitoring wells installed progressively for each earthworks stage:

- One round of baseline groundwater quality data shall be collected from new wells before the commencement of filling. The baseline results will be compared against water quality results from existing wells on site. Baseline groundwater samples will be tested for:
  - Field measurements of pH, redox potential (Eh or ORP), dissolved oxygen, standing water level, EC and total alkalinity.
  - Laboratory measurements of total titratable acidity, total alkalinity, chloride, sulfate, dissolved aluminum (filtered) and dissolved iron (filtered).

C4 (c) Monitoring During Earthworks

- During filling and surcharge earthworks for each development stage, monitoring at well locations (associated with that stage) shall comprise:
  - Field measurements of water level, pH, EC, total alkalinity and redox potential in the field monthly until completion of surcharge filling.
  - Laboratory measurements of total titratable acidity, total alkalinity, chloride, sulfate, dissolved aluminum (filtered) and dissolved iron (filtered) every 2 months.

Performance indicators and response actions for water quality in groundwater wells during earthworks are listed in Table C5a.

C4 (c) Monitoring During Surcharge Period

- For the surcharge period (following earthworks) monitoring at well locations (associated with that stage) shall comprise:
  - Monthly water table level, pH, EC, total alkalinity and redox potential for the initial 2 months then every month until it can be shown that groundwater level has stabilized.
  - Laboratory measurements of pH, EC, total titratable acidity, total alkalinity, chloride, sulfate, dissolved aluminum (filtered) and dissolved iron (filtered) every two months for at least 6 months from commencement of the surcharge period or until 4 months of stabilized results it can be demonstrated.
  - Review of stabilized conditions should be conducted in consultation with the BAC Environmental Coordinator.

Performance indicators and response actions for water quality in groundwater wells during the surcharge period are listed in Table C5b.

C5. PERFORMANCE INDICATORS

Table C5a: Groundwater Monitoring Wells – During Earthworks

Parameter		Monitoring Frequency	Performance Indicator	Action (after performance indicator exceedance)
Field Measurement	Water Level	Monthly	Increase < 100mm above baseline	All results to be reviewed by BAC Environmental Coordinator to confirm the level of risk and need for alternative or additional control measures.
	pH		<0.5 pH drop below baseline	
	redox potential		-	
	EC		-	
	DO		-	
	total alkalinity		>60 mg/L	
Laboratory Analysis	pH, EC, total titratable acidity, total alkalinity, chloride, sulfate, dissolved aluminium (filtered) and dissolved iron (filtered).	Every 2 months	Review against preconstruction levels	

Table C5b: Groundwater Monitoring Wells – During Surcharge Period (post filling)

Parameter		Monitoring Frequency	Performance Indicator	Action (after performance indicator exceedance)
Field Measurement	Water Level	Monthly (until water levels stabilise)	Return to preconstruction levels	All results to be reviewed by BAC Environmental Coordinator to confirm the level of risk and need for additional management measures.
	pH		<0.5 pH drop below baseline	
	redox potential		-	
	EC		-	
	total alkalinity		>60 mg/L	
Laboratory Analysis	pH, EC, total titratable acidity, total alkalinity, chloride, sulfate, dissolved aluminium (filtered) and dissolved iron (filtered).	Every 2 months for at least 6 months following commencement of surcharge period (or until 4 months of demonstrated stabilised results)	Review against preconstruction levels	

C6. MONITORING & REPORTING

The Site Manager shall be responsible for ensuring monitoring listed in Section C5 is conducted at the required frequency.

Groundwater Monitoring

The Site Manager shall maintain a register of groundwater testing results.

A summary report of all groundwater test results shall be compiled monthly and submitted to the BAC Environmental Coordinator.

The Site Manager shall inform the BAC Environmental Co-ordinator of non-compliance with Tables C5a and C5b upon detection. The BAC Environmental Co-ordinator shall instigate an assessment of the impact within 2 days of such detections.

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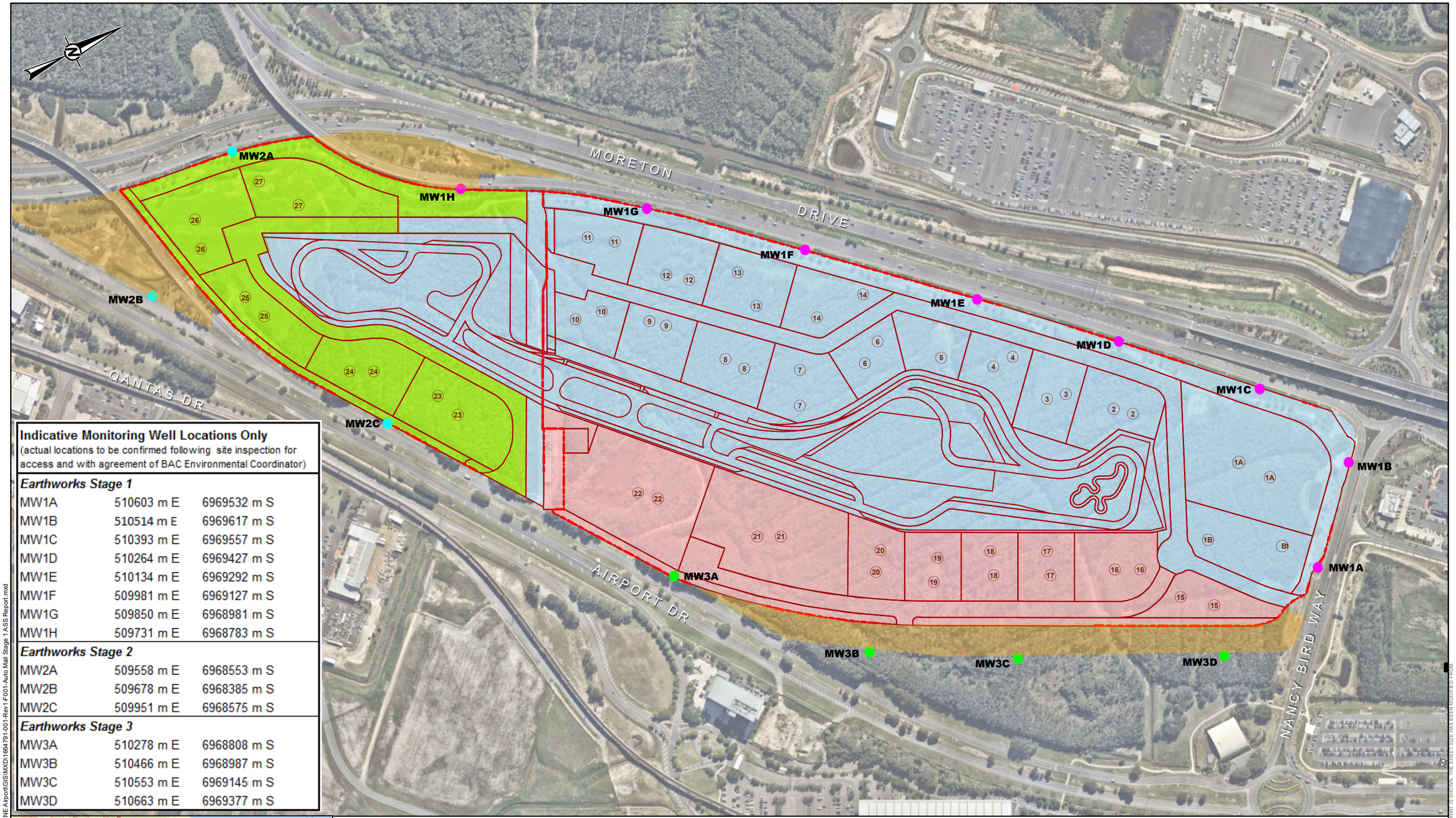
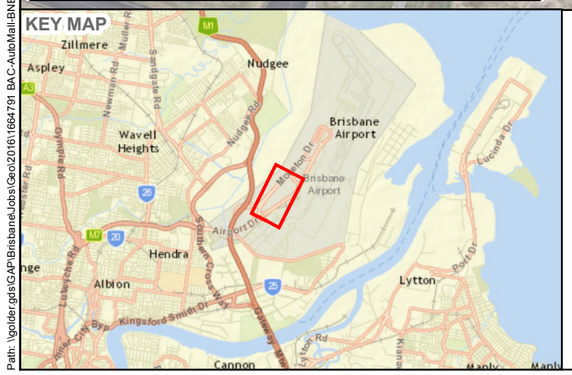


Indicative Monitoring Well Locations Only
(actual locations to be confirmed following site inspection for access and with agreement of BAC Environmental Coordinator)

Earthworks Stage 1		
MW1A	510603 m E	6969532 m S
MW1B	510514 m E	6969617 m S
MW1C	510393 m E	6969557 m S
MW1D	510264 m E	6969427 m S
MW1E	510134 m E	6969292 m S
MW1F	509981 m E	6969127 m S
MW1G	509850 m E	6968981 m S
MW1H	509731 m E	6968783 m S
Earthworks Stage 2		
MW2A	509558 m E	6968553 m S
MW2B	509678 m E	6968385 m S
MW2C	509951 m E	6968575 m S
Earthworks Stage 3		
MW3A	510278 m E	6968808 m S
MW3B	510466 m E	6968987 m S
MW3C	510553 m E	6969145 m S
MW3D	510663 m E	6969377 m S

KEY MAP



LEGEND

- Site Boundary
- BAC Auto Precinct Layout (BRIS0012 SK-025) 24/08/2016
- Indicative Stage 1
- Indicative Stage 2
- Indicative Stage 3
- Indicative Flood Storages

Monitoring Well Locations

- Earthworks Stage 1
- Earthworks Stage 2
- Earthworks Stage 3

NOTES

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0 100 200 300 metres

REFERENCE SCALE: 1:4,500 (AT A3)
PROJECTION: GDA 1994 MGA ZONE 56

CLIENT
BRISBANE AIRPORT CORPORATION

PROJECT
AUTO PRECINCT

TITLE
NOMINAL MONITORING WELL LOCATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-06-27
PREPARED	HG
DESIGN	DP
REVIEW	MS
APPROVED	MS

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1664791	001	2	C1

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D1. GENERAL

The procedures outlined below are provided to mitigate potential seepage of acidic water from surcharged areas.

D2. OBJECTIVES

- Provide neutralising source for acidic seepages resulting from surcharge activities.
- Comply with conditions of licences, permits or other approvals issued for the project.

D3. STATUTORY REQUIREMENTS AND GUIDELINES

1) *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines V4.0, 2014. Dear, S-E., Ahern, C. R., O'Brien, L. E., Dobos, S. K., McElnea, A. E., Moore, N. G. & Watling, K. M. Department of Science, Information Technology, Innovation and the Arts, Queensland Government;*
2) Environmental Protection Act 1994;
3) Environmental Protection Policy (Water) 2009.

D4. IMPLEMENTATION MEASURES

Pre-surcharging Works

- A lime cutoff trench 0.3 m wide and extending to the water table is required along the boundaries of the site as shown on Figure D1. The trench shall be constructed as close as practical (and within a distance of 5m in from) the proposed toe of the fill embankment, prior to the commencement of filling. The trench is to be filled with 150 kg of fine / coarse aglime mix / linear m. Spoil from construction of the trench should be limed at the rate indicated in Procedure A (Table A5a) and relevant to the adjacent section of drain and used as backfill and the remainder mounded on the surface and lightly compacted.
- A 10 m wide strip of lime 'guard layer' shall be placed along perimeter of each stage of filling – where wick drains are present prior to installation of wick drains and placement of the drainage blanket layer. The guard layer will comprise fine ground agricultural lime applied at a rate of 5 kg/m^2.

During Surcharging

- Inspection for seepage from the fill and/or drainage blanket shall be conducted monthly until surcharging earthworks are complete. If seepage is not observed during this period, no further inspections are required.
- Any seepage observed from the fill/surcharge materials should be monitored for pH using a calibrated meter and total titratable acidity (using field strips) daily when seepage is observed.
- Where the seepage water is found to have a pH of less than 6.0 and Total Titratable Acidity >40 mg/L, the water shall be collected, treated to a pH of greater 6.0 and disposed of to land surface or a soakage area within the proposed Auto Mall precinct.

D5. PERFORMANCE INDICATORS

Item	Performance Indicator
Liming of Guard Layer	■ Correct lime application rates are applied as per Section D4.
Construction of Lime Cutoff Trench	■ Lime Cutoff Trenches installed prior to filling.
Seepage Monitoring	■ Any seepage observed is tested and treated, where required.
Non conformance	■ All non-conformances are reported and rectified.

D6. MONITORING & REPORTING

The Site Manager shall be responsible for ensuring works and monitoring listed in Section D4 is conducted at the required frequency.

The Site Manager shall maintain a register of lime application and lime cutoff trench construction (including a photographic record), a record of inspections and water testing results.

A summary report of all test results and inspections shall be compiled monthly and submitted to the BAC Environmental Coordinator.

The Site Manager shall inform BAC Environmental Coordinator of non-compliance with Section D5 upon detection. The BAC Environmental Coordinator shall instigate an assessment of the impact within 2 days of such detections.

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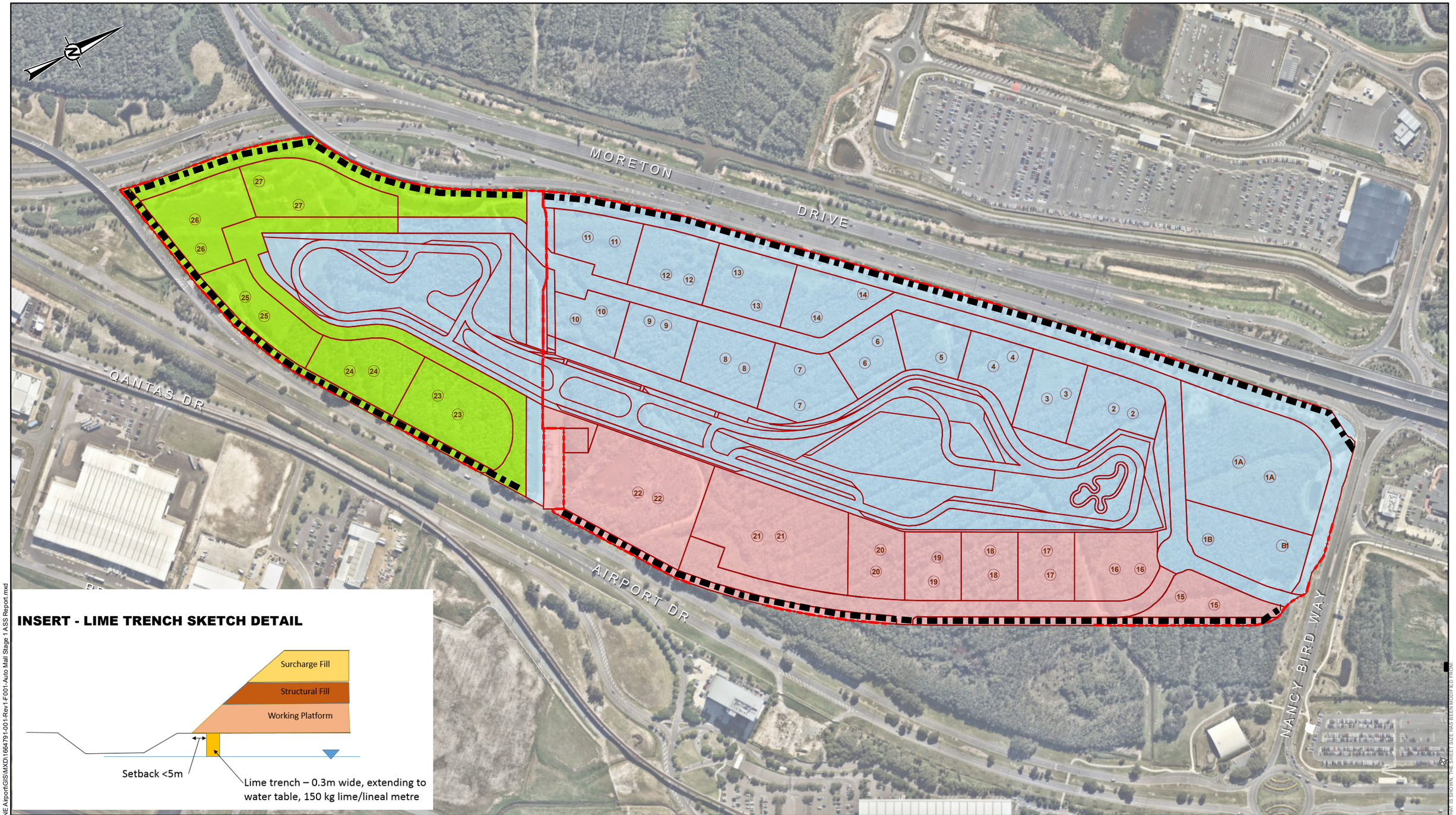

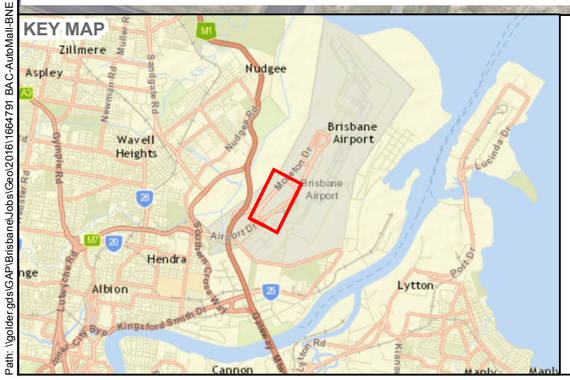

LEGEND

- Site Boundary
- BAC Auto Precinct Layout (BRIS0012 SK-025) 24/08/2016
- Indicative Stage 1
- Indicative Stage 2
- Indicative Stage 3
- Lime Cut off Trench - 150 kg/lineal metre

NOTES

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0 100 200 300 metres

REFERENCE SCALE: 1:4,500 (AT A3)
PROJECTION: GDA 1994 MGA ZONE 56

CLIENT
BRISBANE AIRPORT CORPORATION

PROJECT
AUTO PRECINCT

TITLE
LIME CUTOFF TRENCH LOCATIONS

CONSULTANT

Golder Associates

YYYY-MM-DD	2017-06-27
PREPARED	HG
DESIGN	DP
REVIEW	MS
APPROVED	MS

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APPENDIX C

Important Information

IMPORTANT INFORMATION RELATING TO THIS REPORT

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This Report is provided for use solely by Golder's Client and persons acting on the Client's behalf, such as its professional advisers. Golder is responsible only to its Client for this Report. Golder has no responsibility to any other person who relies or makes decisions based upon this Report or who makes any other use of this Report. Golder accepts no responsibility for any loss or damage suffered by any person other than its Client as a result of any reliance upon any part of this Report, decisions made based upon this Report or any other use of it.

This Report has been prepared in the context of the circumstances and purposes referred to in, or derived from, the Contract and Golder accepts no responsibility for use of the Report, in whole or in part, in any other context or circumstance or for any other purpose.

The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

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Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

Where permitted by the Contract, Golder may have retained subconsultants affiliated with Golder to provide some or all of the Services. However, it is Golder which remains solely responsible for the Services and there is no legal recourse against any of Golder's affiliated companies or the employees, officers or directors of any of them.

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Any uncertainty as to the extent to which this Report can be used or relied upon in any respect should be referred to Golder for clarification.

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Appendix G
Asbestos Containing Materials Management Plan

REPORT

Asbestos Containing Materials Management Plan

Future Auto Mall Precinct

Brisbane Airport, QUEENSLAND

PSK Environmental

Submitted to:

Brisbane Airport Corporation
11 The Circuit,
Brisbane Airport, Queensland, 4007

13 June 2017
Job Number: J0517-005

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Figure 2: Emergency Response Flow Chart

APPENDICES

APPENDIX A – EHP Compliance Alert 1/2013

APPENDIX B – BAC Work Health and Safety Asbestos Corporate Standard

APPENDIX C – Example Forms

APPENIDX D - Study Limitations

GLOSSARY

AIP	Airport Industrial Park.
Airborne Asbestos Fibres	Airborne asbestos fibres are generated by the mechanical disintegration of Asbestos Containing Materials (ACM) and subsequent dispersion of the fibres into the air from activities such as mining and the use, removal and disposal of asbestos and ACM. Dust generated from dry soil containing friable asbestos particles can also carry Airborne asbestos fibres.
ALARP	As low as reasonably possible.
ACM	Asbestos Containing Material - Any material, object, product or debris that contains asbestos.
AD	Aerodrome Datum.
AS/NZS	Australian / New Zealand Standard.
Asbestos	The fibrous form of mineral silicates belonging to the serpentine and amphibole groups of rock-forming minerals, including actinolite, amosite (brown asbestos), anthophyllite, chrysotile (white asbestos), crocidolite (blue asbestos), tremolite, or any mixture containing one or more of the mineral silicates belonging to the serpentine and amphibole groups.
Asbestos-Cement (AC)	Products consisting of sand aggregate and cement reinforced with asbestos fibres (e.g. asbestos cement pipes and flat or corrugated asbestos-cement sheets).
CPA	Central Parking Area
EHP	[Queensland] Department of Environment and Heritage Protection.
EPR	[Queensland] Environmental Protection Regulation.
Friable (Asbestos)	Asbestos-containing material which, when dry, is or may become crumbled, pulverised or reduced to powder by hand pressure. This may include ACM that have been subjected to conditions that leave them in a state where they meet the definition, such as weathering, physical damage, water damage etc.
GIS	Geographical Information System.
HHRA	Human Health Risk Assessment.
NATA	National Association of Testing Authorities.
National Exposure Standard (NES)	An airborne concentration of a particular substance, within the worker's breathing zone, which according to current knowledge, should not cause adverse health effects or undue discomfort to nearly all workers. NES are established, from time to time, by the Safe Work Australia (former NOHSC) and are maintained on the SWA website.
NEPM	National Environment Protection Measures.
NOHSC	[Former] National Occupational Health and Safety Commission (now SWA).
Nominated Person	A person who has undertaken training in accordance with that required under this ACM Management Plan and is assessed as capable by the Site Manager.
Personal Protective Equipment (PPE)	Equipment and clothing that is used or worn by an individual person to protect themselves against, or minimise their exposure to, workplace risks. It includes items such as facemasks and respirators, coveralls, goggles, helmets, gloves and footwear.
Respirable Asbestos Fibre	A fibre of Asbestos small enough to penetrate into the gas exchange regions of the lungs. Respirable asbestos fibres are technically defined as fibres that are less than 3 µm wide, more than 5 µm in length and have a length to width ratio of more than 3 to 1. Airborne dust has the potential to contain respirable asbestos fibres.
SWA	Safe Work Australia (formerly NOHSC)

1.0 PART A - INTRODUCTION

Brisbane Airport Corporation (BAC) has commissioned PSK Environmental Pty Ltd (PSK) to prepare this site specific Asbestos Containing Material (ACM) Management Plan for a proposed multi-lot 51 hectare undeveloped site to be filled, surcharged and developed to form a future Auto Mall Precinct. The site is situated between Airport Drive and Moreton Drive, to the south-east of the Central Parking Area (CPA) development, (Figure 1).

PSK has been requested to develop and document an approach for the safe removal and management of any ACM, should any such material be identified on the surface or in soil recovered from the site during clearing, excavation works and subsequent infrastructure construction at the site.

This ACM Management Plan has been completed in accordance with industry best practise, and meets the minimum requirements for management of ACM impacted soil under current Queensland environmental legislation, which defaults to the requirements of the Department of Health (DOH) *Guidelines for Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia* [*DOH, 2009*] (WA Guidelines).

In line with BAC's proactive approach to Health and Safety at Brisbane Airport, the intention is to have this plan ready to be enacted in the event that asbestos is identified during works scheduled for the site.

2.0 BACKGROUND

2.1 Site Description

The future Auto Mall Precinct comprises an elongated rhomboidal 51 Ha parcel of land, narrowing toward the southern end. The main site is situated between Airport Drive (to the east) and Moreton Drive (to the west) and Nancy Bird Way (to the north), on the western edge of the greater Brisbane Airport. An Energex easement crosses from north east to south west, separating the southern-most third of the site. Additionally three flood storages totalling approximately 3 Ha are to be constructed on land adjoining the main site, across from Airport Drive and Moreton Drive (refer Figure 1).

The current site is, on average, at a surface RL of 2.4 m AD and is currently heavily vegetated with casuarina forest and mangroves. Landers Pocket Drain is the closet surface water body feature, located about 100 m west of the development. Surface water in Landers Pocket Drain flows north-east and south-west before discharging into Kedron Brook Floodway Drain (KBFD) at the northern end, and Kedron Brook at the southern end. The KBFD discharges into Kedron Brook.

2.2 Site History

Contamination investigations of the site have previously been undertaken by Golder Associates in 2016 (*Golder Document Ref. 1538021-013 & 1538021-011*). Golder refer to the portion of the site north of the Energex easement as Stage 1, and the portion to the south as Stage 2. Based on these reports, Stage 1 of the development covers an area of approximately 950 m by 450 m and Stage 2 of the development covers an area of approximately 500 m by 300 m.

Soil logs in the Golder reports indicate that Stage 1 and Stage 2 are underlain predominantly by a layer of fill (sands, gravels and clay) to depths ranging from approximately 0.3m to 1.6m which are in turn overlain by natural compressible alluvium.

Brisbane Airport Corporation maintains a Contaminated Sites Register (CSR). [Former] Contaminated Site 28 is located within the Stage 2 development area, on the boundary with the Stage 1 (based on Figure 1 of Golder Document 1538021-011). Site 28 was listed as containing 'black' mineral sands, but was not reported as containing Asbestos. The next closest site, [Former] Contaminated Site 2A, lies 200 m west of the site. Site 2A was listed for tannery wastes, coal tars, heavy metals and petroleum hydrocarbons, investigated in 1993 and 1996, 2005 and 200, and is listed as having been remediated by Coffey in 2008.

There is no record of asbestos on either Site 28 or Site 2A on the CSR. However, asbestos waste has been discovered dumped on the surface and mixed in soil fill in several unlisted locations previously on Brisbane Airport and so its occurrence cannot be disregarded.

2.3 General Information on Asbestos

Asbestos is the generic term for a group of naturally occurring minerals characterised by fibres with high tensile strength, flexibility, and resistance to thermal, chemical and electrical conditions. The most common types of asbestos include chrysotile, crocidolite and amosite (i.e. white, blue and brown/grey asbestos respectively). Asbestos fibres enter the body by the inhalation and/or ingestion of airborne particles that can become embedded in tissues of the respiratory or digestive systems.

World authorities have recognised asbestos to be a human carcinogen for over 20 years, based on observation of an increased incidence of lung cancer, mesothelioma and gastrointestinal cancer in occupationally exposed workers across a range of investigations and study populations. Information from animal studies on the inhalation of fibres support these findings, although evidence for carcinogenicity via ingestion is limited.

Asbestos is a contaminant that differs from most others. In particular, its toxicology is such that it primarily affects humans rather than being a risk to the environment. Inhalation of asbestos fibres can produce a range of lung-associated diseases, including cancers, sometimes resulting from only low levels of exposure. It usually occurs discretely in a given impacted area and will not generally degrade over time to form less harmful materials (i.e. it is very persistent). It can migrate through physical disturbance and dangerous fibres can be released.

Asbestos is not considered to be an environmental contaminant as it occurs naturally (Section 1.2.2 of WA Guidelines). However, serious health concerns are associated with the inhalation of asbestos fibres. Thus a health risk assessment has been undertaken and forms the basis of this management plan. Nothing specified in this plan alters or modifies guidelines as set down within the Safe Work Australia Code of Practice – How to Manage and Control Asbestos in the Workplace (2011), or the Safe Work Australia Code of Practice – How to Safely Remove Asbestos (2011), or the requirements laid down under all relevant Queensland legislation. Information contained in any one section must be read in conjunction with the whole of the ACM Management Plan, including appendices or attachments.

2.4 BAC Asbestos Policy

Brisbane Airport Corporation is striving to have all buildings and sites occupied or controlled by BAC be free of asbestos materials. The purpose of the Policy (and associated Management Plan) is to prevent the exposure of any person to airborne asbestos fibres while ACM remain in the workplace and to ensure compliance with asbestos prohibition regulations.

BAC conducts regular audits of buildings at Brisbane Airport, identifying the presence of asbestos and assessing the risk to the health and safety of persons. Where asbestos is located in leased premises, BAC will work with tenants to ensure that all persons are informed about ACM in their workplace, the risks associated with ACM and the control measures in place.

3.0 OBJECTIVES

This site specific ACM Management Plan is aimed at identifying issues related to handling any soil disturbed that contains ACM (where identified) and related constraints to the future Auto Mall Precinct development and associated works, including:

- Providing an approach through which any ACM identified during construction works at the site can be safely managed;
- Outlining requirements for air monitoring during the excavation works (should friable asbestos be identified) and subsequent remediation of any ACM impacted soil; and
- Outlining requirements for validating excavations following removal of any ACM impacted soil identified, or else containing ACM impacted soil onsite under a soil cap or finished pavement.

The content of an ACM Management Plan may change or undergo revision based upon additional information when made available, or on enacting the plan.

4.0 PROPOSED DEVELOPMENT

The proposed future Auto Mall is to comprise a 2.5 km test track in the middle of the site surrounded by development lots for future commercial use totalling approx. 38 Ha. Private access roads are situated around the perimeter of the site. An Energex substation and easement is present within the site. Three shallow flood storage areas will also be constructed close to the development site.

The future Auto Mall Precinct is to be filled and developed in three stages as highlighted in Figure 1. Earthworks at the site will include removing trees, slashing, grubbing and raking, or similar preparation, of the surface in areas where wick drains are to be installed representing approx. 6% of the developable area of Stage 1 (Figure 1); however, it is understood that the areas of wick drains may increase as part of the detailed design of the earthworks currently underway. Similar surface preparation will take place prior to the excavation of three flood storage areas outside proposed development site and the perimeter drainage channels. The remainder of the area proposed for filling and surcharge will have the trees removed, but will not be grubbed (i.e. rootballs and stubble will remain in place avoiding unnecessary disturbance). Clearing will be followed by placement and compaction of 2.0 m or more of imported fill material and temporary surcharge to levels ranging from 3.5m AD to 7.0m AD. Finished levels for the proposed track, commercial lots and perimeter roads will range from 3.25 m to 4.25 m AD.

Once Stages 1 and 2 are filled and surcharged, subsequent works will comprise the removal of excess surcharge to design fill levels to complete filling and surcharging of Stage 3. Limited future cuts are expected for service trenching associated with the future Auto Mall underground services. Additionally a small area to the immediate north of the Energex substation will be cleared and filled and set aside for a future transformer.

The drainage channels will be excavated around the site perimeter at grade level with invert levels as low as RL 0.2 m AD in the western portion of the site. The drainage channels will discharge into nearby surface water drains. Of the works proposed, the excavation of these channels and the flood basins are most likely to encounter the former surface (and possibly dumped ACM). It is understood that excavation of the perimeter drainage channels will be undertaken in stages to maintain surcharge fill stability.

PSK understand that the future Auto Mall site is proposed to be developed following the earthworks in stages, namely:

- Stage 1: Track, roads and selected development lots; lots north of the Energex easement between the track and Moreton Drive, and the Track and Nancy Bird Way.
- Stage 2: development lots south of the Energex easement.
- Stage 3 (last stage): development lots north of the Energex easement between the track and Airport Drive.

5.0 REGULATORY REQUIREMENTS

The ACM Management Plan has been developed in accordance with requirements of the following:

- Airports (Environmental Protection) Regulations, (1997)
- BAC Work Health and Safety Asbestos Corporate Standard (2012)
- Department of Health, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, (May 2009)
- Safe Work Australia (SWA) Code of Practice - How To Manage And Control Asbestos In The Workplace (2011a)
- Safe Work Australia (SWA) Code of Practice – How to Safely Remove Asbestos (2011b)
- Department of Health, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, (May 2009)

- National Environmental Protection (Assessment of Site Contamination) Measures (NEPM) 1999 - Schedules B1 and B2, (as amended May 2013). Note this now supersedes the original 1999, and Draft 2011 NEPM issues.

An asbestos management plan '*sets out how asbestos or ACM that is identified at the workplace will be managed, including, what, when and how it is going to be done'* (Safe Work Australia, 2011a). Table 1 indicates areas where an Asbestos Management Plan provides guidance (adapted from Safe Work Australia, 2011a).

Table 1: Areas of an ACM Management Plan

KEY AREAS	Applicable Section of Plan
The identification of asbestos and ACM, for example a reference or link to the asbestos register for the workplace, and the locations of signs and labels.	To be included if identified
Decisions, and reasons for the decisions, about the management of asbestos at the workplace, for example safe work procedures and control measures.	Section 7.2
Workers carrying out work involving asbestos, for example consultation, information and training responsibilities.	Section 7.4
Procedures for detailing accidents, incidents or emergencies of asbestos at the workplace.	Section 7.7
OTHER AREAS	
A timetable for managing risks of exposure, for example priorities and dates for any reviews, circumstances and activities that could affect the timing of action.	Section 7.2
Procedures, including a timetable for reviewing and, if necessary, revising the asbestos management plan and asbestos register.	Section 7.2
Identification of each person with responsibilities under the asbestos management plan and the person's responsibilities.	Section 7.3
Air monitoring procedures at the workplace, if required.	Section 7.5
An outline of how asbestos risks will be controlled, including consideration of appropriate control measures.	Section 7.5

6.0 RISK ASSESSMENT

6.1 Risk Management and Control

For an ACM related risk to eventuate on-site, the following are required:

- A source of asbestos (e.g. ACM present in surface or disturbed subsurface soils).
- A valid receptor (e.g. on-site workers, nearest off-site community, site users/visitors).
- A transport mechanism between the source and receptor (e.g. dust generation, direct contact).

If a source, receptor(s) and a transport mechanism are all present, then an exposure pathway exists. The risk posed by the ACM prior to redevelopment works is considered to be low as ACM has not been identified at [former] Contaminated Site 28 or elsewhere within the development area.

Any identification of suspect ACM is to be reported to BAC immediately, with sampling and analysis undertaken to confirm or otherwise the presence and nature of any asbestos found.

If ACM is confirmed, a suitable Sampling and Analysis Quality Plan (SAQP) is to be prepared and followed, and management measures and protocols specified in this ACM Management Plan adopted and work ceased in the affected area(s) until these measures are in place.

Effective management and control of risks associated with ACM uncovered during excavation require:

1. early **IDENTIFICATION** of ACM through ongoing inspection
2. performing a **RISK ASSESSMENT** for any ACM identified
3. implementing **CONTROL MEASURES** to mitigate the potential for asbestos fibres to be released to air
4. ongoing **ASSESSMENT AND REVIEW**

6.2 Tier of Risk Assessment Required

The asbestos risk assessment process involves the identification, evaluation and control / monitoring of all known sources of asbestos at the site. Asbestos represents a health risk to people only when asbestos fibres are airborne and subsequently inhaled. The risk to health increases as the number of fibres inhaled increases where the dose is a function of concentration of airborne asbestos fibres and duration of exposure.

Asbestos that is in a stable matrix (i.e. bound), or is effectively encapsulated or sealed while undisturbed represents a negligible asbestos related health risk, while disturbed friable asbestos represents a high risk. It is thus necessary to differentiate between 'asbestos hazard' and 'asbestos risk'. A hazard indicates potential for harm, while a risk refers to the probability of that harm actually occurring. The presence of asbestos in soil is a hazard, but while any asbestos remains covered or in a bonded state and does not release fibres into the air, the risk is low.

The WA Guidelines indicate that the primary reference in undertaking a Human Health Risk Assessment is the Contaminated Sites Management Series (CSMS), which includes *'The Use of Risk Assessment in Contaminated Site Assessment and Management: Guidance on the Overall Approach (DEC, 2006)'.*

This approach recommends that a Risk Assessment should start early in the investigation and management process in order to guide subsequent actions and to ensure that on-site personnel and the local community are protected during and as a result of any development.

Immediate hazard response actions and contamination control measures and contingencies may sometimes be necessary (as outlined in Appendices C and D of the WA Guidelines).

The WA Guidelines recommend a staged approach for risk assessment, involving:

- Tier 1: screening risk assessment;
- Tier 2: intermediate (simple) risk assessment; and
- Tier 3: detailed (site-specific) risk assessment.

Although complete exposure pathways have not been confirmed at this time (i.e. while the site remains undisturbed), a Tier 1 risk assessment has been developed (refer Section 5. of the WA Guidelines). Tier 1 includes development of a simple conceptual site model capturing information related to the contamination exposure pathway(s) to known receptors and thus helps determine where risk occurs.

<u>If suspected ACM is identified and confirmed by laboratory analysis</u>, a Preliminary Site Investigation (PSI) in accordance with Section 11 of the current NEPM (as of May 2013) will be required, including sampling and analysis of effected areas.

The minimum sampling frequency required to assess asbestos in soil in these areas according to the WA Guidelines is summarised in Table 2 (to reiterate, this is only required where the presence of ACM is confirmed). Note that if ACM is identified in any other areas during development, a similar sampling frequency would need to be adopted.

Table 2: Minimum Sampling Points for Characterisation of ACM

Work Area	Type of Disturbance	Disturbance Area	No. of Sampling Points	Equivalent Sampling Density	Diameter of Hotspot Identified (m) (95% Confidence)	Average Grid Size (m)
Flood Storage Areas	Uniform Area (Appendix A of WA Guidelines	~ 30,240 m^2	~ 40 in 3 areas	13.3 points/ Ha	~ 32	~27
Estimated Area for Wick Drains	Uniform Area (Appendix A of WA Guidelines)	~ 27,500 m^2	Up to 40 in 4 areas	13.5 points / Ha	~ 32	~ 25
Perimeter Drains	Linear Disturbance (Adopted)	~ 3,000 m	Up to 40	1 point / 75 m	n/a*	n/a*

Note: * Hotspot diameters are not particularly relevant for linear disturbances (i.e. aspect ratio of greater than 100:1), however, coverage confirms an adequate theoretical grid size.

The WA Guidelines do not take account the different types of mineral asbestos and fibre dimensions in developing investigation trigger criteria for asbestos in soil. However, such information is useful if site specific clean-up criteria are required to be developed.

6.3 Characterization of Asbestos Contamination

Specific site investigation information on asbestos distribution, concentration and condition (i.e. especially relating to fibre generating potential) is of most importance in characterising asbestos contamination.

While Section 11 of the NEPM provides information on conducting an asbestos risk assessment, it generally defaults to the WA Guidelines and is intended to be used in conjunction with these. Sampling and analysis requirements for risk assessments have been developed for areas where the existing surface will be significantly disturbed and ACM may be detected; particularly the installation of the perimeter drainage channels totalling approx. 3,000 linear metres in length, in areas where wick drains will be installed and the external flood storage areas.

The minimum sampling frequency required to assess asbestos in soil in these areas according to the WA Guidelines is summarised in Table 2. Note that if ACM is identified in any other areas during development, a similar sampling frequency would need to be adopted.

It has been assumed that fill to be imported to site and surcharge material will originate from a 'clean' source, and will not contain ACM. Given the site will be covered by imported fill and temporary surcharge, the risk of exposed ACM being present on the site is very low. However, the likelihood that some ACM impacted soil underlies some areas of the future Auto Mall Precinct cannot be disregarded completely. Thus, a low risk remains of ACM being present in areas that will not be permanently covered by 'new' fill. Encountering ACM during excavation of the perimeter drainage channels and flood storage areas is more likely and remains a moderate risk.

Given the information available, the proposed development and associated drainage works is considered a Tier 1 risk. This will remain the case unless ACM is specifically identified during clearing operations, drainage earthworks or trenching for any services below current RL. If asbestos is detected, the occurrence of ACM in soil will need to be clearly delineated laterally and vertically and the extent identified on an appropriately scaled Figure (i.e. minimum 1: 1,000 scale) before any further disturbance occurs. ACM need only be identified in areas that are to be disturbed by clearing and grubbing and excavations for drains or in-ground services.

Reference to Table 1 of the WA Guidelines 'Triggers and Types of Asbestos Investigations', indicates that the appropriate scenario for this site is 'Possible', i.e. uncontrolled fill without mixed building waste and/or an undeveloped site adjacent to urban infill (& possible dumping)

6.4 Determining Exposure Scenario

Potential exposure includes all activities associated with the site during its development and for future long-term management of areas not completely covered by recent fill.

Possible receptors and potentially complete exposure pathways include:

- Site construction personnel – direct contact and dust during site works;
- The Local community - i.e. nearest tenants including buildings and carparks in the Central Parking Area to the west and the International Terminal and Coles Express fuel depot, which are the receptors most vulnerable to dust emissions;
- Site visitors and final users (i.e. users of the finished future Auto Mall).

For asbestos, the primary exposure concern will be any activities with the potential to generate the release of airborne asbestos fibre from any ACM present, including direct disturbance and associated wind and water derived erosion. The possible release of airborne asbestos fibre is considered to be limited to clearing of the surface in preparation for filling, the exposure of pre-existing subgrade, excavations for services and surface drains and any stockpiled spoil.

Although only 'possible' complete exposure pathways during construction have been identified, a Tier 1 risk assessment has nonetheless been undertaken based in general on Schedule B1 of the National Environment Protection (Assessment of Site Contamination) Measure – Guideline on the Investigation Levels for Soil and Groundwater (NEPM Variation 2013) without carrying out soil sampling or analysis.

At this stage, evaluation is theoretical, as there are no specific soil test results or air monitoring data available for the actual site. However, if results of any monitoring conducted during the construction phase or relevant activities on nearby sites are made available, they should be utilised in refining the risk model.

Any wind breaks and air quality sampling sites should be placed downwind of the site on the site boundary. These would only be adopted if friable asbestos (FA) or asbestos fibres (AF) is identified. However, as wind direction is seasonally influenced, their placement will be principally dependent on the time of year when construction is undertaken.

6.5 Risk Outcomes

For the Tier 1 assessment, the contamination concentrations (if known) are compared against the soil asbestos investigation criteria levels specified in Section 6.6. In this instance, criterion IV (0.02%) has been adopted as the proposed site use is as 'public open space'.

If levels of ACM identified on the site do not exceed criterion IV and subsequent investigations undertaken are deemed to be in accordance with the WA Guidelines, <u>then no further specific management actions are required</u>. If exceedences of criterion IV are reported, these criteria are to be used as 'clean-up' goals or other appropriate forms of remediation undertaken and a more detailed Tier 2 or Tier 3 assessment completed before works can continue.

6.6 Investigation Criteria and Clean-up Goals

Findings of research conducted in the Netherlands by Swartjes and Tromp in 2008 was used in developing the WA Guidelines investigation criteria. In the WA Guidelines, the investigation criteria reported by Swartjes and Tromp are divided by a factor of 10 to take into account the greater dryness and dust-generating potential of many local Australian soils and include naturally occurring asbestos.

The fibrous asbestos criterion applies to both fibrous asbestos (FA), and asbestos fibres (AF) due to their ability to generate asbestos fibre. These criteria mirror the National Environmental Protection Measure (NEPM) site uses and associated default exposure ratios.

The WA Guidelines have adopted the soil asbestos investigation criteria summarised below. For this site, **Criterion IV** is the most appropriate although if fully sealed post development, Criterion V could conceivably be adopted:

I. 0.001% w/w asbestos for FA and AF – For all site uses.

II. 0.01% w/w asbestos for ACM – For residential use, day care centres, preschools, etc.

III. 0.04 % w/w asbestos for ACM – For residential with minimal soil access.

IV. 0.02% w/w asbestos for ACM – For parks, public open spaces, playing fields, etc.

V. 0.05 % w/w asbestos for ACM – For Commercial/Industrial

Note: that the FA and AF criteria of 0.001% w/w remain fixed for all site uses because the means to determine concentration differences at this level of detection is difficult.

These criteria can also be adopted as soil clean-up goals if this is the chosen form of remediation, rather than capping the impacted material with clean, compacted fill. In order for this to be achieved, the top 10 cm of soil must also be made completely free of visible asbestos. This may be achieved by installing, as a minimum, 10 cm of clean, compacted fill as a capping, or in the case of ACM or FA contamination, by several cycles of hand-picking and fine raking taking into account the 'Hand-Picking (Emu-Bob)' procedure outlined in Section 4.1.1 of the WA Guidelines, followed by validation.

7.0 PART B - ACM MANAGEMENT PLAN

The following ACM Management Plan is to be implemented immediately if any ACM is confirmed in soils disturbed at the site (including associated service trenching and drainage works).

7.1 Proposed Remediation Methods

7.1.1 General

The Draft National Environment Protection (Assessment of Site Contamination) Measure (April 2011) promotes on-site remediation and management as the preferred option for dealing with contaminated soils. In the hierarchy of remedial options, disposal to landfill should be used only when no other method of dealing with the spoil is available and the operator of the landfill agrees to accept the material for disposal.

On-site remediation management, or off-site disposal to landfill, were considered appropriate options to manage the identified ACM impacted soil; however, the preferred remediation method is to manage the identified ACM impacted soil *insitu* by covering the ACM impacted soil with clean fill and/or sealed pavements to provide a barrier between the ACM and potential receptors, except for excess spoil from service trenches and perimeter drains which may need to be relocated and capped or disposed of.

Where ACM is identified, the BAC WHS Asbestos Corporate Standard (see Appendix A) is to be followed including the provision of signage as appropriate.

7.1.2 Management Aims

Where ACM is identified , management goals applicable to this site include the following activities:

- Reduce the risk of generating airborne asbestos fibres by implementing dust control measures to ensure levels are consistent with that of background concentrations – e.g. use of fine water spray
- Undertaking remediation and subsequent validation of all exposed surfaces where ACM has been identified
- Capping so that the asbestos impacted area poses a negligible risk to future site users.

If capping is adopted for management by BAC, a minimum of 0.5 m of clean soil will be placed on the site as a capping layer, in accordance with Section 5.2 of the WA Guidelines. In addition to the minimum 0.5 m capping layer, a geo-fabric layer with a coloured strip for identification will be placed between the impacted material and the capping layer to provide an indication of the presence of underlying ACM in soil contamination to future maintenance and/or construction workers. The proposed works at the site include placement of fill that will generally be thicker than 0.5 m and hence will act as a capping layer. Excess spoil from service trenches and perimeter drains which cannot be replaced in the trench and capped over must be removed offsite or capped elsewhere within the work zone.

7.2 Ongoing Management Requirements

To effectively manage integrity of a capping layer, long term management of the site is required including:

- listing the defined Management Area(s) on BACs Contaminated Sites Register (CSR) accompanied by copies of the relevant investigation and site remediation reports and the current revision of this ACM Management Plan;
- approving the future works proposed in the capped area through BAC's development approval process or Permit to Work (PTW) and which will include provisions for asbestos management;
- undertaking annual inspections of the capping layer / pavement to assess the continued integrity;
- employing short-term management requirements during the capping works and ongoing management of the capping layer post capping as detailed in this plan; and
- vegetating (with shallow rooting grasses etc.), or otherwise stabilising any unpaved areas of capping to reduce soil erosion.

7.3 Organizational Responsibilities

This ACM Management Plan is to be integrated into current BAC asbestos management procedures and into redevelopment works that will be undertaken on the site. The following key personnel are responsible for the implementation of the control measures discussed in this document.

7.3.1 Principal Contractor(s)

The Principal Contractors' responsibilities include:

1. Ensuring guidelines and recommendations set out in this ACM MP are adhered to.
2. Ensuring asbestos related matters are safely controlled including specific contractor inductions.
3. Implementing appropriate work methods and control measures for all staff and subcontractors working within areas of known ACM impact, in accordance with the conditions and of this plan.
4. Managing of systems to ensure suitable contractors and consultants are engaged to carry out asbestos-related works and to ensure the necessary safety standards are maintained for the works.
5. Obtaining necessary approvals from regulatory authorities prior to starting any removal of soil impacted with ACM, if required (e.g. EHP disposal permit). Lead in time may need to be allowed for.
6. Ensuring site personnel and visitor concerns with asbestos related matters are reported and dealt with in a satisfactory and timely manner.
7. Arranging for assessment and sampling of suspected ACM, if identified.
8. Ensuring all remedial works involving ACM are suitably supervised.
9. Maintaining a register of all relevant asbestos documentation including updating the asbestos register and/or ACM Management Plan.

7.3.2 Site personnel

Site personnel (including subcontractors) responsibilities include:

1. Informing the construction manager of the presence of any unknown asbestos hazard or a suspected asbestos hazard identified on the site.
2. Complying with this ACM Management Plan to ensure all personnel on-site including visitors are not at risk of exposure to airborne asbestos fibres.

7.3.3 Other Contractors

Other Contractor's responsibilities include:

1. Ensuring that work methods and procedures comply with the relevant legislation, codes of practice and industry standards, and undertake work according to the requirements nominated by BAC.
2. Employing suitably trained, skilled and competent staff during encapsulation or excavation of any ACM impacted area.
3. Reporting to BAC and/or its Principal Contractor before undertaking any works on sites identified as possibly containing ACM.
4. Ensuring that their employees are inducted in safe work procedures for asbestos and ACM.
5. Ensuring that all work is conducted in a safe and competent manner.
6. Reporting incidences or potential asbestos hazards to the applicable responsible officer(s) before further works are carried out.

7.3.4 Remediation Supervisor

Management and remediation (if required) should be supervised by a suitably qualified person to ensure methods documented in this plan are undertaken correctly. Where ACM has been identified It is prudent to ensure any interim clearing or development be supervised by a suitability qualified person.

7.4 Health & Safety Requirements

7.4.1 Occupational Heath Exposure Standards

Exposure of site personnel to asbestos is to be limited as much as is reasonably achievable. Where occupational exposure to asbestos or ACM is likely to occur, exposure is not to exceed legislated occupational exposure standards for asbestos published by Safe Work Australia.

Occupational exposure is measured using the Membrane Filter Method, by collecting a sample of air from the breathing zone of a person, over eight hour duration. The current Australian occupational exposure standards for asbestos are:

- Chrysotile (white asbestos) – 1.0 fibres per millilitre;
- Amosite (brown asbestos) – 0.1 fibres per millilitre;
- Crocidolite (blue asbestos) – 0.1 fibres per millilitre;
- other forms of asbestos or a mixture of asbestos types – 0.1 fibres per millilitre.

(Refer: *NOHSC, 1995 - Exposure Standards for Atmospheric Contaminants in the Occupational Environment, Australian Government Publishing Service,* Canberra).

7.4.2 Personal Protective Equipment

The principal exposure pathway for asbestos exposure is through inhalation of dust particles. PPE must be used to reduce the potential of exposure. As a minimum, disposable dust masks should be worn by all personnel at all times on-site. The potential to inhale particulate matter can be further reduced by the use of P2 respirators for personnel working on-site.

These respirators must be used if ACM is identified at the site and the following implemented:

- Respiratory protection shall be worn by all persons within Work Zones on-site.
- Persons required to wear respiratory protection shall receive training and instruction on the selection of appropriate equipment, its usage and maintenance.
- Respirators (dust masks) shall be issued on a personal basis. Respirators shall conform to the requirements of Australian Standards AS1715 and AS1716 and must be of a minimum P2 standard.
- Persons required to wear facial fit respirators shall be clean shaven.
- Non-disposable respiratory protection shall be cleaned regularly, at least at the end of every shift.
- Regular cleaning and maintenance of respirators should be carried out in an area free of asbestos contamination using a damp cloth. The potential exposure risk for cleaning respirators is considered negligible. Regular cleaning is essential because dirt can interfere with the operation of valves and seals or the outside of the respirator may become contaminated during normal and fibres may be transferred to the inside of the respirator from where they may be inhaled
- All tools and equipment shall be cleaned and washed with water and wet wiped with a damp cloth prior to leaving the work zone.
- All vehicles shall be washed down with water and the site manager shall inspect all equipment and vehicles for possible asbestos contaminants before they leave the Work Zone.

7.4.3 Personnel Hygiene

If ACM is identified at the site disposable coveralls shall also be worn by all persons within the Work Zone until impacted soil is removed or capped. All persons leaving the Work Zone shall thoroughly clean footwear of all adhering materials through the use of water.

Persons shall not eat, drink or smoke within any established Work Zone(s).

All disposable PPE shall be disposed of as contaminated waste once used in appropriately labelled asbestos waste bags and double bagged.

7.5 Management of Remediation Works

Two methods of remediation are available: disposal and encapsulation. Disposal off-site may not be practical and would involve a higher level of supervision, so encapsulation is the preferred remediation option. However, any excess spoil from service trenches or the perimeter drains may need to be removed offsite under an EHP Disposal Permit, or else capped adequately, elsewhere within the defined work zone.

7.5.1 Air monitoring

If ACM is confirmed in the management area, monitoring for airborne asbestos fibres will be required during construction works involving disturbance of soil and established prior to commencing work. Fibre air monitoring must be undertaken by a qualified person during any soil disturbance activities within confirmed ACM impacted area.

Airborne fibre monitors shall be placed within the Work Zone in areas downwind of the site where ACM is detected. Wind direction is predominantly south-easterly for most of the year at Brisbane Airport, but may change seasonally and should be confirmed prior to undertaking any specific monitoring. Assuming the predominant south-easterly wind direction, monitoring stations would be required along the north-western boundary of the future Auto Mall Precinct placed at a minimum of 400 m spacings downwind of areas(s) where ACM is confirmed. Suitable monitoring locations are indicated on Figure 1 (although 8 possible locations are depicted, fewer locations could be utilised depending on where ACM is actually identified).

7.5.2 Implementation of Control Measures

Any exposed ACM is to be capped (or removed and the surface validated). Prior to the commencement of the capping of ACM impacted soil, the following control measures are required to be implemented:

- Establish a support zone and define the extent of work zone.
- Barricade or rope off the area(s) to be capped.
- Erect appropriate signage warning of asbestos hazard.
- Ensure all workers entering the site are wearing respirators that shall conform to the requirements of Australian Standards AS1715 and AS1716 and must be of a minimum P2 standard.
- Engage an environmental consultant to undertake air monitoring and supervision.
- Engage a suitably qualified person to inspect all areas prior to disturbance.
- Provide dust suppression in the form of a light water spray, applied every two hours during dry periods, less often if surface soils remain moist.
- Suspend works in times of high wind during dry periods.
- Machine operators are to remain within the cab of the machine which must have air-conditioning fitted with the appropriate filter or operated with air being recirculated within the cab.

Should monitoring detect airborne fibres at a concentration exceeding the ‘site clearance criterion” (i.e. 0.01 fibre/ml), then works are to cease until improved management measures are adopted. These can include increased watering frequency and/or installation of hessian wind breaks up wind of the affected areas. Note that this is stricter than the actual health-based limit of 0.1 fibre/ml.

7.5.3 Support Zones

A Support Zone is to be established by BAC’s nominated contractor, based on site conditions. This is considered to be a safe area and can contain temporary buildings, washdown area etc. Site safety briefings would be carried out in the Support Zone at the commencement of each work shift. The Support Zone can be incorporated into the Contractor’s Compound (if not situated within the Work Zone) or in any areas that will not be disturbed. Any vacant area including the designated Energex easement through the site could be utilised for this purpose provided there is sufficient room and it is at least 100m^2 (refer Figure 1).

7.5.4 Work Zones

Temporary activity specific Work Zones will be established by BAC or its nominated contractor in any areas where ACM is positively identified. During any capping works the Work Zone(s) will be barricaded as required. Work Zone(s) are to extend at least 5m beyond all sides of the work area; for this reason the designated site should not extend to within 5m of existing roads.

If ACM impact is limited to only portion(s) of the site then only the affected portions, extending 5m beyond the impacted area in all directions, need be barricaded and designated a Work Zone. The asbestos risk within the Work Zone will dictate fulltime wearing of specified personal protective equipment (PPE) if any ACM has been identified.

7.5.5 Hand/Emu Pick

Prior to continuing works within any confirmed impacted areas, an initial 'emu pick' is to be undertaken to clear the site of any visible fragments of possible ACM. Any fragments should be placed within appropriately designed and labelled asbestos waste bags and disposed of at a licensed facility. The emu pick is to be undertaken by a person qualified in accordance with the strategies outlined in the WA Guidelines.

7.5.6 Site Clearing and Grubbing

As part of development works, some clearing, slashing and/or raking of vegetation will be required. As this may involve the disturbance of soil and therefore the potential disturbance of ACM (where confirmed), management practices outlined in this ACM management plan are to be adhered to during this activity.

Vegetation to be removed will generally not include any roots (i.e. rootballs are to remain insitu). However vegetation stripped for wick drains (Figure 1), drainage channels, flood storage areas and other trenching activities will include roots. Prior to vegetation being mulched, roots should be visually inspected onsite for possible ACM. If ACM is suspected, the roots should be removed and disposed of as asbestos waste. Burning of vegetation should not be undertaken onsite as potential ACM on surface soils may incur some degradation increasing the risk of airborne asbestos fibres.

7.5.7 Dust Suppression

When any soil disturbance activities are to be undertaken, a fine water spray shall be used to suppress the dust at the commencement of the day's construction activities and at regular intervals during the day, i.e. every two hours, or when surface water evaporates or dust is observed. Spraying is to be used during any soil disturbance within the impacted area. Where possible, temporary buildings and plant is to be situated upwind from ACM impacted excavation areas during soil disturbance works.

7.5.8 Temporary Containment

The principle pathway for asbestos exposure is through inhalation of particulate matter (dust). If the remediation of an impacted area is delayed for a period of greater than 1 month and other personnel will be operating on-site, the ACM impacted area(s) are to be covered in the short term with a thin layer of sand or gravel, or minimum 200 µm thick plastic, well secured. This will limit exposure risk to site personnel and the public. For the containment to be effective it must be able to withstand heavy rain and strong winds. No persons are permitted to disturb containment areas unless authorised by BAC.

When the temporary containment is no longer required, decommissioning would involve removing the plastic layer in a manner which minimises disturbance. Sand or gravel would remain and be included in ACM impact materials for disposal or capping. Fibre air monitoring should be continued during setup, containment and decommissioning.

7.5.9 Regular Inspection

To monitor the effectiveness of temporary onsite containment area, the area is to be regularly inspected. Inspections are also to be undertaken immediately after heavy rainfall events. Should areas of exposed ACM impacted soil be identified, these areas should be re-covered immediately.

Where applicable, recently established vegetation or cover layers such as geo-fabric are to be monitored on an ongoing basis.

7.5.10 Ongoing Management of ACM

Should site personnel observe suspected ACM fragments at the site, these materials should be collected immediately and placed into labelled bags for disposal. The risk to health from handling asbestos cement or sheeting fragments is low as the asbestos fibres are bound into a cement matrix and are unlikely to release respirable fibres unless mechanically abraded.

When the materials are safely contained, a judgement can be made as to whether the materials can be disposed of as asbestos waste, or if procedures to safely return the materials to the site should be developed. If any friable asbestos is detected, the area should be barricaded immediately and a suitably qualified person (i.e. a Class A Asbestos Removalist) be employed to remove the asbestos.

7.5.11 Management of Suspected ACM Outside Delineated Areas

Should site personnel observe possible ACM on an area not identified as ACM impacted, this material is to be collected immediately by a suitably qualified person and placed into asbestos bags (refer to Section 5.5 of the SWA Code of Practice *How to Manage and Control Asbestos in Workplace* for specifications of asbestos bags) and sealed.

The risk to health from handling asbestos cement fragments is considered negligible as the asbestos fibres are bonded into the cement matrix and are unlikely to generate respirable fibres unless mechanically abraded (i.e. shredded, ground etc.). However, as a precautionary measure, all persons handling asbestos cement fragments should wash their hands immediately after contact. Sealed asbestos bags containing asbestos fragments may be stored on site in a secure area until such time that the bags can be removed by a licensed contractor. If friable asbestos is detected, the area should be barricaded immediately and a suitably qualified person (i.e. a Class A Asbestos Removalist) be employed to dispose of the material.

7.5.12 Sampling, Analysis & Validation

If suspected ACM is observed during the works and future sampling is required, samples are to be analysed using polarised light microscopy (PLM) or other applicable analysis techniques such as scanning electron microscopy (SEM), and any airborne fibre monitoring undertaken using the membrane filter method. All analysis is to be conducted by a NATA accredited laboratory.

Smaller, isolated areas (if remediated) – spoil is to be sampled for validation at a rate of 1 sample per 50m^2 or per 10 linear m length for predominantly linear excavations.

7.5.13 Capping Works Operations

Any ACM impacted areas that are to be capped must be clearly delineated and identified on an appropriate figure which shall be appended to a revised ACM Management Plan. Additional activities that may involve soil disturbance within ACM impacted areas after encapsulation should also be undertaken in accordance with these management procedures.

All information and works pertaining to the encapsulation of soil containing ACM is required to be recorded and reported (refer to section 7.5.16 below).

All works at the site involving the removal, encapsulation, transport, disposal or otherwise potential disturbance of ACM impacted soil shall be performed in accordance with all relevant State Acts, Regulations, Codes of Practice, Advisory Standards and industry standards (Section 6.0 of this document).

7.5.14 Capping Materials

Imported material is to be used for any capping. Such material is required to be verified as 'clean fill' from a confirmed source or Virgin Excavated Natural Material (VENM) which includes manufactured materials.

Capping material shall not consist of actual or potential Acid Sulfate Soils (ASS) unless lime treated and validated.

The following procedures are to be implemented for placement of capping material:

- Practical measures must be undertaken to reduce the risk of erosion of the finished cap. This may include the use of perimeter sediment fences, vegetative cover, geo-fabrics and/or pavements;
- The capping layer must be a minimum thickness of 0.5 m compacted earth (including any bulk fill);
- The horizontal and vertical boundaries of the asbestos impacted layer and completed capping layer must be surveyed to an appropriate height datum and a plan prepared and maintained on record.

Geo-fabric textile layers (where used) are to meet the following requirements:

- be permeable to water;
- have a high visibility (i.e. coloured strips incorporated) and good tensile strength;
- be rot-resistant and chemically inert;
- cover the impacted area approximately 0.5 m beyond the boundary of the impacted area if possible;
- parallel sheets are to be fixed together with at least a 20 cm overlap.

All documentation relating to any onsite encapsulation undertaken, including a plan of the location encapsulated and a 'typical' transverse section, must be provided to BAC on completion of works. Note that a section is not necessary for linear works.

All works will be conducted applying the appropriate control measures and in accordance with all applicable Regulations and Codes of Practice including those listed in Section 6.0 of this document.

7.5.15 Inspection of Capping

To monitor the effectiveness of the onsite encapsulation, it is essential that capped areas be inspected annually, as per the Code of Practice for the Management and Control of Asbestos in Workplaces (2005), by a responsible officer appointed by BAC, or a suitably qualified person. Should areas of erosion be identified, these areas should be reinstated immediately with clean soil.

Where applicable, any vegetation cover should also be monitored on an ongoing basis. In areas where capping (i.e. fill) is greater than the minimum 0.5 m; inspection is not required unless work involving disturbance of the fill to within 0.5 m of the previous surface level is subsequently undertaken.

All outcomes of inspections are to be documented in Brisbane Airport's asbestos register or otherwise recorded.

7.5.16 Reporting and Documentation

BAC or the Principal Contractor (TBC) is responsible for maintaining a record of events relating to all asbestos works at the site. Should any asbestos related works be undertaken, these events are to be recorded and maintained for future reference.

The following (as a minimum) requires recording:

- Details of all inspections;
- Details of all remediation works;
- Identification of any ACM impacted areas;
- Any complaints / incidents that occur relating to asbestos;
- Any authorised or unauthorised intrusion of the soil capping layer; and
- Any other asbestos related issues.

7.5.17 Offsite Disposal

If excavation of soil containing ACM is undertaken and it is required to be disposed off-site, the material will require further assessment as to whether it can be classified as regulated waste, contaminated soil or uncontaminated soil. Such classification is to be undertaken by an appropriately qualified and experienced person in accordance with Section 381 of the Environmental Protection Act (1994) (subject to revision of that Act).

If ACM or impacted soils are classified as regulated waste, it can be disposed to an approved landfill by vehicles licensed with the EHP for the transport of regulated waste. As the parent Lots that effectively comprise the whole of the Brisbane Airport are listed on the State's Environmental Management Register a Disposal Permit will be required regardless of whether other contamination is identified prior to disposal. Disposal permits, a letter of acceptance from the landfill site and all other disposal documentation must be supplied to BAC and/or the Principal Contractor upon completion of works.

Information related to the transportation of asbestos materials in Queensland is summarised in a 'Compliance Alert' – EHP, June 2013 (Appendix A).

7.5.18 Decontamination of Personnel and Equipment

Decontamination is an essential process in preventing the possible distribution of asbestos fibres to other areas on or off the site.

Disposable P2 respirators are to be removed in the following method:

- Spray a light mist of water onto your face and wet wipe. Then remove the respirator by lifting it up, away from the breathing zone.
- Disposable respirators should be discarded into the waste bag.
- The waste bag must then be placed into a second waste bag and sealed gooseneck style.
- Hands and face are to be washed.

Regular cleaning of respirators (non-disposal) is essential because:

- Dirt can interfere with the operation of valves and seals and lead to leaks of contaminated air into the respirator.
- The outside of the respirator may become contaminated during normal use. If contamination is not removed it may be transferred to the inside of the respirator from where it may be inhaled.
- Normal good hygiene practice dictates cleaning and disinfecting of respirators on a regular basis.

All persons leaving a designated Work Zone shall thoroughly clean footwear of all adhering materials through the use of water. All tools and equipment shall also be cleaned and washed with water and wet wiped with a damp cloth before leaving a Work Zone. Prior to leaving the work zone all vehicles shall be washed down with water.

The site manager shall inspect all equipment and vehicles for possible asbestos contaminants before it leaves the Work Zone.

7.5.19 Decontamination Plant and Equipment

Plant that remains clean of ACM impacted material at all times will not require specific decontamination. If plant does come into contact with ACM impacted material, decontamination of plant and equipment will occur as follows:

- A designated "wash down" area shall be selected and used consistently throughout the works. The plant and machinery "wash down" area must be situated within a work zone (any Work Zone is suitable.
- All plant and equipment is to be washed thoroughly using a water hose at the conclusion of each day's work and prior to leaving the site.

- The plant and equipment wash down area is to be lined with 200 micron (200 µm) plastic and contoured to catch and channel all wash water through filter medium with a pore size of less than 5 microns (<5 µm). After washing of the plant and equipment is concluded, filter media should be disposed of as 'asbestos waste'.
- Appropriate disposal will comprise placing the filter media in a clear polyurethane bag, tying the bag 'gooseneck' style and then placing the sealed bag into a second polyurethane bag and sealing as before (i.e. double bagging).
- Appropriate PPE shall be worn by all persons during washdown of plant and equipment and bagging of the filter medium.
- At the completion of works the plastic liner is to be disposed of as asbestos waste using the procedures as stated above. If there is any indication that the integrity of the liner has been compromised, the top 0.1 m of soil directly below the break in the liner is to be scraped up and disposed of as per the disposal permit.

7.6 Management of ACM Post Works

On-going management of any soil capping is important to ensure ACM is not uncovered in such a manner that future contractors, BAC staff, visitors and site users are not unnecessarily exposed to airborne asbestos fibres. The coloured strips incorporated into geo-fabric placed on top of the cap will act to alert offenders if capping over any ACM is inadvertently disturbed.

Future excavation of ACM impacted soil and disposal offsite to an approved landfill site may not be the most appropriate control method given the relatively low risk the asbestos cement fragments pose and the cost to undertake such works, so prompt replacement of broken or deteriorated capping is a preferred option.

7.6.1 Notification of Future Works

Any future works proposed on the future Auto Mall Precinct site should be identified in BAC's development approval process or Permit to Work (PTW) process and should consider the requirements for asbestos management. Any contractor and/or person(s) undertaking soil disturbance work within the site must comply with this plan if ACM is subsequently identified and confirmed.

7.6.2 Implementation of Control Measures

Prior to the commencement of future soil intrusion works within any capping area the following control measures are required to be implemented:

- Establish suitable locations for a support zone as per Sections 7.5.3 and 7.5.4 should ACM be confirmed.
- If ACM is confirmed, rope off areas to be capped and establish the extent of the Work Zone.
- Erect appropriate signage warning of asbestos hazard.
- Ensure all workers entering the site are wearing P2 masks.
- Engage an environmental consultant to undertake air monitoring and supervision.
- Engage a suitably qualified person to inspect all areas prior to disturbance.
- Ensure that machine operators remain within the cab of the machine which must have air-conditioning fitted with the appropriate filter or operated with air re-circulated within the cab.
- BAC or its nominated contractor shall establish a Support Zone(s) based on site conditions and nature of works, to be a 'safe area' on-site to contain project administration areas.
- Undertake Site Safety briefings at the commencement of each work shift as appropriate.

7.6.3 Air monitoring

Fibre air monitoring must be re-introduced and carried out by a qualified person during any soil disturbance activities within designated capped areas. Airborne fibre monitors shall be placed within the work zone in areas downwind of the site, as well as on the boundary of the nearest occupied areas (receptor), as previously identified.

7.6.4 Designation of Future Work Zone(s)

Temporary activity specific Work Zone(s) will be established by BAC or its nominated contractor. During future soil disturbance works, Work Zone(s) will be barricaded as required. Where practicable, the Work Zone should extend 5m in all directions from the work area. Person entering a Work Zone should be wearing the appropriate PPE.

7.6.5 Temporary Containment

Any future disturbance of soil will require temporary containment measures and these are to be undertaken in accordance with the requirements of Section 7.5.8.

7.6.6 Re-instatement of Capping

Following completion of any future excavation works, a thorough visual inspection of the work area shall be undertaken by a suitably qualified person to ensure all visible signs of ACM have been removed.

On completion of this visual inspection, the complete area shall again be sprayed with water and re-capped in accordance with the requirements of Sections 7.5.13 and 7.5.14

7.6.7 Sampling & Analysis

Any future sampling and analysis for asbestos shall be undertaken in accordance with the requirements of Section 7.5.12, and conducted by a NATA accredited laboratory.

7.6.8 Decontamination of Plant and Equipment

Provided the plant is positioned on clean fill/material at all times decontamination of plant and machinery will not be required; however, if this is not the case, decontamination of plant and machinery will occur in accordance with Section 7.5.19.

7.7 Emergency Response Procedures

An emergency situation would likely entail a scenario where ACM present on site has been inadvertently disturbed or friable asbestos detected (for the first time), which is likely to release respirable fibres on-site and to the immediate receiving environment. Whether through actions of site personnel, contractors, or machinery operating in ACM impacted area, BAC and/or its nominated contractor shall be notified immediately and all work cease until the site has been cleared of ACM and/or remediated by a suitably qualified person. Emergency response procedures are detailed in the flow chart in Figure 2 (attached).

8.0 REPORTING

8.1 Site Remediation

Detailed records of any remediation and validation activities undertaken on the future Auto Mall Precinct or associated works are to be maintained such that all activities relating to asbestos matters, site monitoring and final validation undertaken are recorded.

Reporting and record keeping is to be in accordance with the BAC Corporate Standard for Asbestos (Appendix B).

As a minimum, site records shall include:

- any temporary in-situ asbestos management measures employed;
- extent of site clearing activities and general earthworks;
- records of any/all capping works and inspections;
- all asbestos fibre air quality (dust) monitoring results; and
- records of any asbestos or ACM identified or disposed of off-site.

A report is to be compiled detailing any/all remediation activities and final validation (if undertaken) at the completion of remediation works and submitted to BAC for review.

As a minimum the report shall include the following:

- a brief summary of background information;
- scope of development works;
- remedial methodology adopted;
- records of all site works including photographs;
- results of all asbestos fibre air quality (dust) monitoring and soil validation sampling undertaken;
- final conclusions;
- on-going management requirements (if required); and
- Figure(s) displaying the surveyed boundary of impacted areas and final extent of capping and/or validated areas.

Where ACM is identified this management plan is to be revised outlining specific works that have been conducted and the management strategy to be put in place relating to confirmed ACM remaining on site. The management plan should be made available to all staff and contractors undertaking work within site boundaries as indicated in Figure 1.

In addition all asbestos related works and information is to be documented within BACs Asbestos Register and Management Plan, including but not limited to:

- re-inspections;
- remedial works; and
- identification of ACM.

8.2 Emergencies

All employees are to report the presence of previously unidentified ACM or suspected ACM immediately to their direct manager and BAC as soon as possible, as identified in the Emergency Response Flow Chart (Figure 2). The report form provided (Appendix C) is to be used for reporting exposure to any suspected asbestos hazard on site.

The HSE Coordinator, in consultation with the employee's immediate manager, will determine other internal or external notification required in accordance with the Emergency Response Flow Chart (Figure 2).

An incident report form is used to report all the presences of previously unidentified or suspected asbestos containing material on-site and must be completed by either the employee or Project Manager.

8.3 Complaints

Employees must report any complaints associated with the presence of previously unidentified or suspected ACM to their immediate manager as soon as practical. The Complaint Register form (in Appendix C), should be used for reporting all complaints.

The project manager will determine other internal or external notification and actions if required in accordance with Figure 2 – Emergency Response Flow Chart.

9.0 STUDY LIMITATIONS

This ACM Management Plan has been developed to manage and minimise asbestos related health risks associated with ACM if found to be present in soil disturbed on the future Auto Mall Precinct site at Brisbane Airport during earthworks or future infrastructure construction, and to provide guidance when undertaking the following procedures:

- outlining the extent of any identified ACM contamination in soil;
- providing sufficient information to allow the undertaking of a detailed site specific risk assessment regarding the identified ACM in soil at the site;
- managing the ACM during remediation works; and
- long-term site management with respect to ACM and possible future disturbance.

This plan does not include strategies for the management of any other contaminants that may be present in soils at the site, or asbestos in other areas outside the designated site boundaries (refer Figure 1).

In addition, attention is drawn to the limitations of this report which are outlined in Appendix D. The statements presented in this Limitation document are intended to advise you of what your realistic expectations of this management plan should be, and to present you with recommendations on how to minimise the risks associated with the earthworks and future infrastructure works for this project. The document is not intended to reduce the level of responsibility accepted by PSK Environmental. However, it is important that all parties who rely on this Management Plan are aware of the responsibilities that each party assumes in so doing.

10.0 CLOSURE

To date, the occurrence of ACM fragments on the surface and in soil has not been confirmed at the site.

As such, this ACM Management Plan, which has been developed to manage and minimise asbestos related health risks associated with ACM impacted soil at the future Auto Mall Precinct and any associated works, may not actually need to be implemented unless ACM is confirmed to be present in soil disturbed during excavations at the site. However, if enacted, this plan is to be implemented in full along with the recommended level of soil sampling and analysis and associated site monitoring.

Henry Parsons

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Dr Silvana Santomartino

Principal (CPSS)

PSK ENVIRONMENTAL PTY LTD

A.B.N. 87162 860 371

11.0 REFERENCES

AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment.

AS/NZS 1716:2012 Respiratory protective devices.

Airports (Environmental Protection) Regulations (1997)

Brisbane Airport Corporation Work Health and Safety Asbestos Corporate Standard (2012)

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PSK Environmental - Results of ACM Testing, Sugarmill Road Roundabout - J1013-005-001 Rev0 (Dec 2013)

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Safe Work Australia Code of Practice – How to Safely Remove Asbestos (2011).

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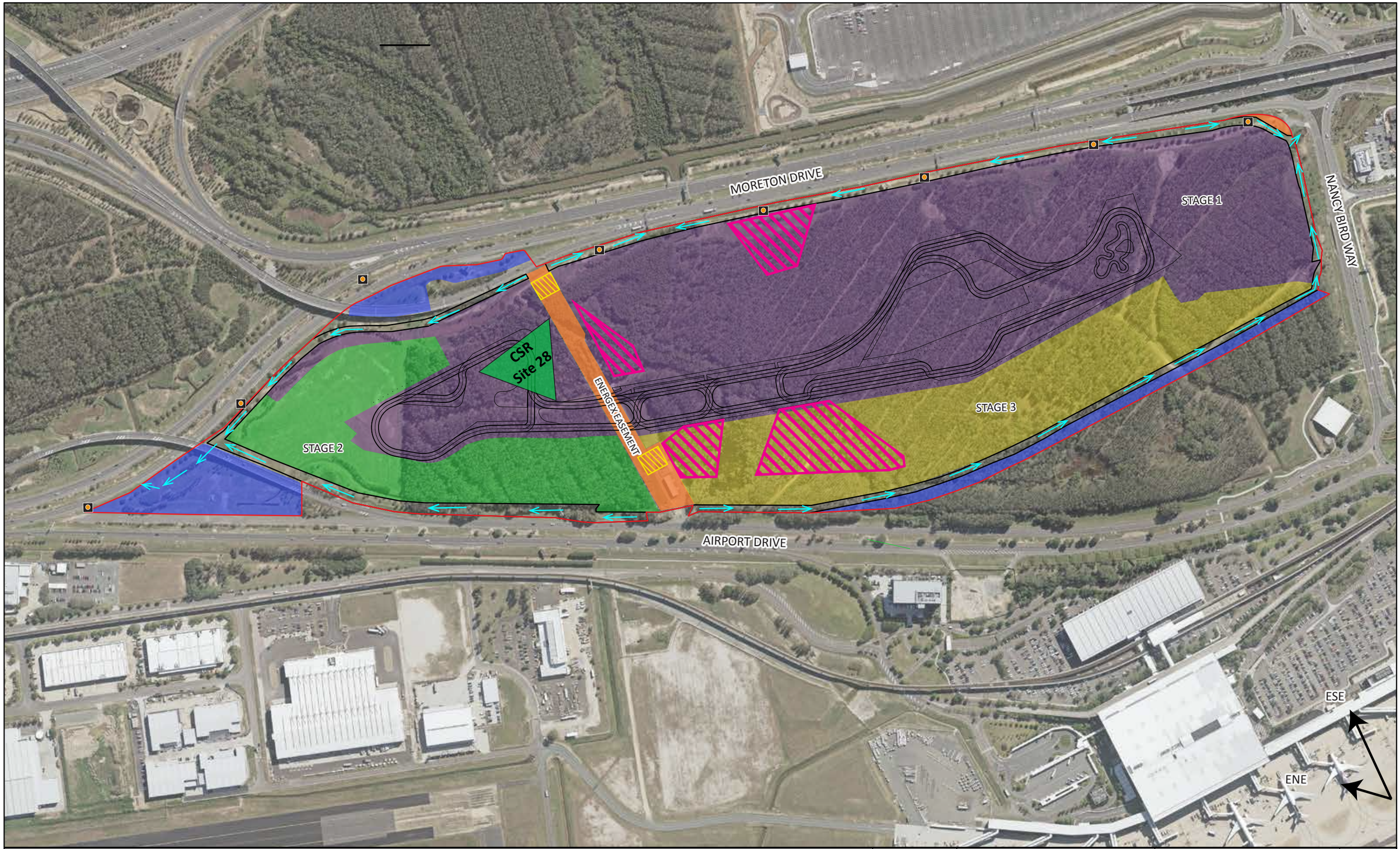
FIGURES



LEGEND

- Suitable Air Quality Sampling Locations (only if ACM is detected)
- Site Boundary (Work Areas Not to Cross Site Boundary)
- Energex Easement
- Contaminated Site (Remediated)
- Wick Drains * (Clearing & Grubbing)
- Flood Storage Areas (Clearing & Grubbing)
- Possible 'Support Zone' locations (if ACM detected)
- Drainage Channel Excavation (Clearing & Grubbing)
- Dominant Wind Directions

Notes:
* Extent subject to change with detailed design
- Sampling locations only if ACM is detected.
- Baseplan extracted from ImageGlobe 2016. Imagery Date: 23/05/2017
- Staging plan extracted from MLDesign, Staing Plan, BAC Driver Experience Center, BRIS0012 SK-017.
- Drainage network and flood extent extracted from; OPUS, BAC Auto Mall Precinct, flood water levels layout plan, Q-B4176.00 SK09 B.

PSK Environmental

Client: Brisbane Airport Corporation		Project: Future BAC Auto Mall Precinct Asbestos Containing Material Management Plan	N
Drawn: NK	Date: 08/06/2017	Title: **SITE PLAN AND AIR QUALITY SAMPLING LOCATION**	
Checked: HP	Date: 08/06/2017		
Scale: 0m – 175m			
Job No.: J0517-005-001	Fig. No.: 1	Rev: 1	A3

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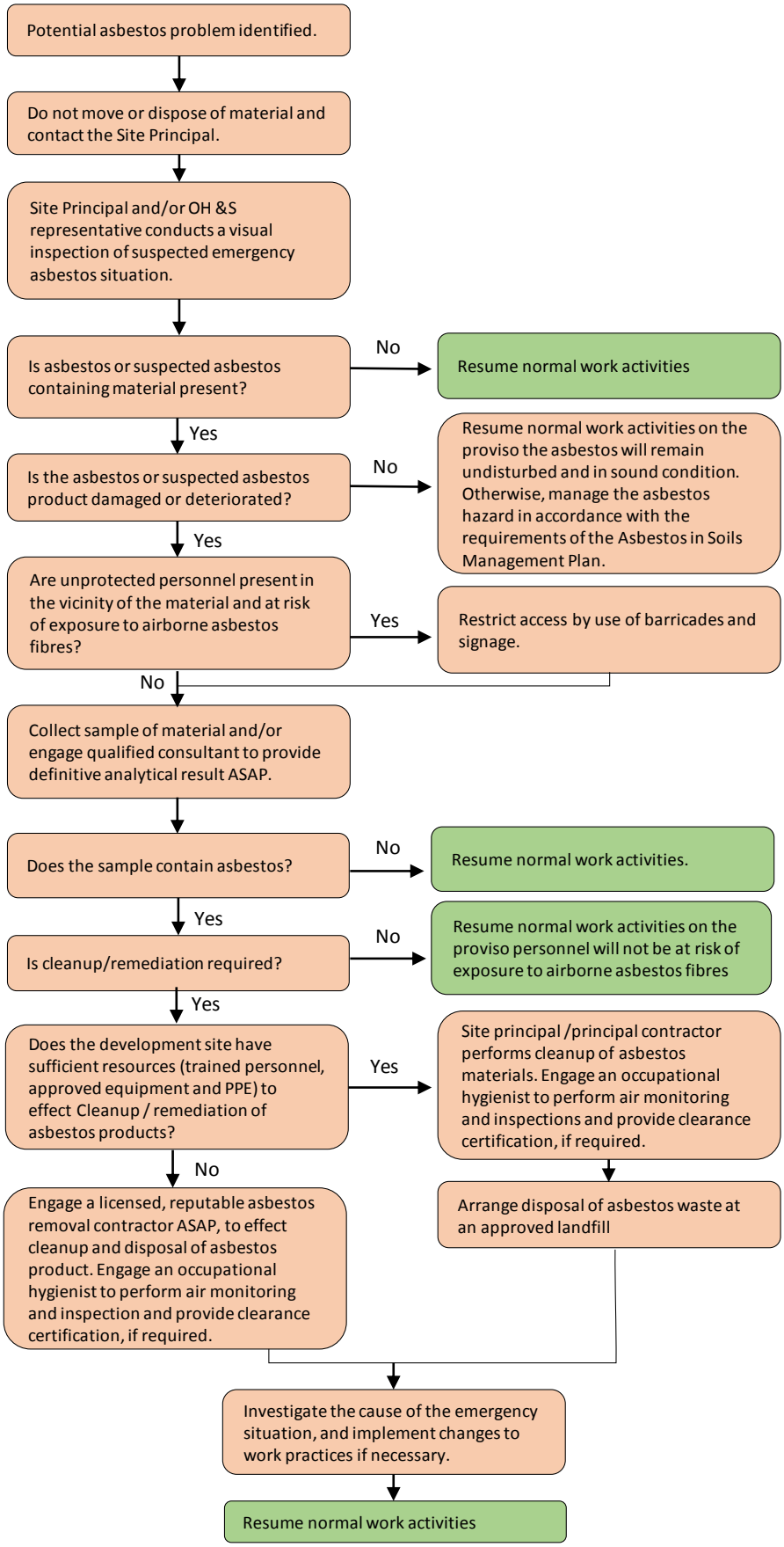

Figure 2. Emergency Response Flow Chart

APPENDIX A

EHP Compliance Alert 1/2013

Compliance alert 1/2013

The Department of Environment and Heritage Protection (EHP) uses compliance alerts to assist industry improve its compliance practices and better understand its responsibilities in achieving good environmental practices.

This also gives operators an additional opportunity to know what they need to meet their obligations. In some circumstances, taking enforcement action, such as prosecution, is in the public interest.

EHP is committed to an ongoing analysis of its enforcement activity, so that common areas of non-compliance can be identified and highlighted to relevant industry sectors with guidance as to steps they can take to improve performance and avoid enforcement action.

Functional area:

Environment

Sector:

Waste

Topic:

Transport and disposal of asbestos

Asbestos is defined as a regulated waste under the Environmental Protection Regulation 2008 and commercially transporting asbestos is regulated by environmental protection legislation. Any commercial or industrial waste that contains residues of a type of regulated waste, including asbestos is also regulated.

A person must not transport on a commercial basis, any quantity of asbestos in a vehicle unless they hold or are acting under an environmental authority.

In order to regulate the transport of asbestos and other trackable waste it is a requirement of the Environmental Protection (Waste Management) Regulation 2000 (the Regulation) that waste handlers submit waste tracking information to EHP.

The purpose of the waste tracking system is to enable EHP to track waste from its source to the place of storage, recycling, treatment or disposal. Waste tracking ensures all parties involved with managing waste take a responsible attitude towards waste management and that waste is transported and managed in a way to prevent illegal dumping which could cause, or has the potential to cause, environmental harm.

Under the Regulation, a waste transport certificate (WTC) must be completed for each load of trackable waste.

The waste transporter must:

- Carry the WTC (white, green, blue and yellow copies) with parts 1 and 2 completed with the load.
- Give the white and yellow copies of the WTC to the waste receiver.
- Keep records of the waste transport for five years (blue copy of WTC with all parts completed).
- Notify EHP of any discrepancies associated with the transaction.

The transport and disposal of asbestos or asbestos containing material (ACM) must be undertaken very carefully to prevent its exposure to the environment because of its known effect on human health.

If the source of the asbestos or ACM is a site listed either in the Environmental Management Register (EMR) or Contaminated Land Register (CLR), a disposal permit is required. A disposal permit must be obtained prior to starting extraction of materials, including contaminated soils from the site.

Case study

In June 2013, analysis of EHP waste tracking data found a number of operators had failed to provide details of an authority to transport waste. Subsequent investigations revealed that three operators were not authorised to transport waste and those operators were issued with penalty infringement notices (PIN) relating to transporting asbestos without the required approval.

To ensure operators are lawfully transporting regulated waste and providing complete and accurate tracking information, EHP will continue to undertake random audits to monitor compliance and take appropriate enforcement action when required.

A PIN can be issued to a commercial operator who unlawfully transports regulated waste in the amount of 20 penalty units, totalling $2200. The maximum penalty for a commercial operator who transports regulated waste, including asbestos without the required approval is 1665 penalty units, totalling $183,150.

Penalties also apply for failing provide complete and accurate waste tracking information.

Complying with the legislation

It is important that the waste handlers comply with the requirements of environmental protection legislation

by ensuring:

- Regulated wastes are only transported in a vehicle by a person who holds or is acting under an environmental authority.
- WTCs are completed and EHP is notified of the transport by sending copies of the WTCs to EHP within the specified timeframe.
- Disposal of regulated wastes only occurs to a place/facility with an environmental authority to receive regulated wastes.
- Those involved in the removal of asbestos must also ensure that they comply with additional obligations under the relevant legislation.

Contact information

For licensing enquiries contact:

Permits and Licence Management Unit

GPO Box 2454

Brisbane Qld 4001

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June 2013

APPENDIX B

BAC Work Health and Safety Asbestos Corporate Standard

Corporate Standard

Asbestos

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APPENDIX A

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1.0 PURPOSE

Brisbane Airport Corporation (BAC) aims to provide a work environment without risk to any person.

This includes ensuring that people are not placed at risk from exposure to asbestos in buildings, plant, structures and land controlled by BAC. The ultimate goal of the Corporation is for all of these areas to be free of asbestos materials.

The purpose of this Corporate Standard is to document the processes maintained by BAC to prevent the exposure of any person to airborne asbestos fibres while asbestos-containing materials (ACM) remain in the workplace as well as to ensure compliance with asbestos regulations.

BAC will conduct regular audits of its buildings, structures and known contaminated sites at Brisbane Airport, identifying the presence of asbestos and assessing the risk to the health and safety of people.

Where asbestos is located in leased premises, BAC will work with tenants to ensure that information is provided regarding ACM in the workplace, the risks associated and the control measures in place.

For the purpose of Chapter 8 of the *Work Health and Safety Regulation 2011* (Qld), this Corporate Standard is BAC's asbestos management plan.

2.0 SCOPE

This Corporate Standard applies to all areas of Brisbane Airport and to any maintenance or asbestos removal activities undertaken by BAC workers (including contractors).

3.0 DEFINITIONS

Term	Definition
Airborne asbestos	Any fibres of asbestos small enough to be made airborne. For the purposes of monitoring airborne asbestos fibres, only respirable fibres (i.e. fibres that are small enough to penetrate the gas exchange regions of the lungs) are counted.
Asbestos	The asbestiform varieties of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals, including actinolite asbestos, grunerite (or amosite) asbestos (brown), anthophyllite asbestos, chrysotile asbestos (white), crocidolite asbestos (blue) and tremolite asbestos.
Asbestos-containing material (ACM)	Any material or thing that, as part of its design, contains asbestos.
Asbestos-contaminated dust or debris (ACD)	Dust or debris that has settled within a workplace and is (or assumed to be) contaminated with asbestos.
Asbestos-related work	Work involving asbestos (other than asbestos removal work) that is permitted under the exceptions set out in s419 (3), (4) and (5) of the *Work Health and Safety Regulation 2011*

	(Qld).
Asbestos removalist	A person conducting a business or undertaking who carries out asbestos removal work.
Asbestos removal work	Work involving the removal of asbestos or ACM and Class A asbestos removal work or Class B asbestos removal work as outlined in Part 8.10 of the *Work Health and Safety Regulation 2011* (Qld).
Competent person	A person who has acquired, through training, qualification or experience, the knowledge and skills to carry out the task. *Note: licensing/certification may be required for some of the tasks described in this document as requiring a competent person.*
Exposure standard (asbestos)	A respirable fibre level of 0.1 fibres/ml of air measured in a person's breathing zone and expressed as a time weighted average fibre concentration calculated over an eight-hour working day and measured over a minimum period of four hours in accordance with: • the Membrane Filter Method • a method determined by the relevant regulator.
Friable asbestos	Material that is in a powder form or that can be crumbled, pulverised or reduced to a powder by hand pressure when dry, and contains asbestos.
GHS	The *Globally Harmonised System of Classification and Labelling of Chemicals*.
In-situ asbestos	Asbestos or ACM fixed or installed in a structure, equipment or plant but does not include naturally occurring asbestos.
NATA-accredited laboratory	A testing laboratory accredited by the National Association of Testing Authorities (NATA), Australia, or recognised by NATA either solely or with someone else.
Naturally occurring asbestos (NOA)	The natural geological occurrence of asbestos minerals found in association with geological deposits including rock, sediment or soil.
Non-friable asbestos	Material containing asbestos that is not friable asbestos, including material containing asbestos fibres reinforced with a bonding compound.
Respirable asbestos	An asbestos fibre that: • is less than 3 microns (μm) wide • is more than 5 μm long • has a length to width ration of more than 3:1.

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4.0 BACKGROUND

Asbestos is a naturally occurring mineral fibre that was widely used in structures such as buildings, processing plants, ships, trains and motor vehicles in the 1950's, 1960's and 1970's. Its extensive use was due to the versatility of the product, which withstands heat, erosion and decay, and has fire and water resistant properties. The most commonly found building materials that contain asbestos are asbestos cement products.

Whilst the use of all forms of asbestos was banned across Australia on 31 December 2003, ACM are still present in a large number of older buildings.

When asbestos is contained in a bonded form, maintained in a good condition and left alone, it presents no health risks. Asbestos is only a health risk if asbestos fibres are released into the air and inhaled. Common work situations in which fibres may be disturbed and released into the air include building and maintenance related activities such as:

- Flooring maintenance and installation;
- Air-conditioning maintenance and installation;
- Electrical, plumbing and hydraulic systems maintenance and installation;
- Building renovation and maintenance work such as replacement or repair of wall and ceiling linings;
- Demolition;
- Painting and coating/sealing of ACM; and
- Removal and disposal of asbestos.

The *Work Health and Safety Regulation 2011* (Qld), Workplace Health and Safety Queensland (WHSQ) *How to Manage and Control Asbestos in the Workplace Code of Practice 2011* and the WHSQ *How to Safely Remove Asbestos Code of Practice 2011* all provide regulated guidance in controlling asbestos-related risks in the workplace. Any works carried out on ACM must adhere to this legislation.

4.1 Risks associated with exposure to airborne asbestos fibres

Asbestos is a carcinogen and the inhalation of asbestos fibres is known to cause mesothelioma, lung cancer and asbestosis.

Mesothelioma is a rare type of cancer that forms on the mesothelium, a protective tissue that lines several of the body's internal organs (lungs, abdomen, heart and reproductive organs).

Exposure to asbestos is almost exclusively responsible for the development of mesothelioma. It is caused by the inhalation of asbestos fibres deep into the lungs where they can damage mesothelial cells, potentially resulting in cancer. The latency period is generally between 35 and 40 years, but may be longer, and the disease is very difficult to detect prior to the onset of illness.

Mesothelioma was once rare, but its incidence is increasing throughout the industrial world as a result of past exposures to asbestos. Australia has the highest incidence rate in the world. There is no cure for mesothelioma.

Lung cancer has been shown to be caused by all types of asbestos. The average latency period of the disease, from the first exposure to asbestos, ranges from 20 to 30 years. Lung cancer symptoms are rarely felt until the disease has developed to an advanced stage.

Asbestosis is a form of lung disease (pneumoconiosis) directly caused by inhaling asbestos fibres, causing a scarring (fibrosis) of the lung tissue. The continual creation of scar tissue causes the walls of the lungs' air sacs to thicken, reducing the lungs' capacity to take in oxygen and remove carbon dioxide. The latency period of asbestosis is between 15 and 25 years.

Asbestos poses a risk to health by inhalation whenever asbestos fibres become airborne and people are exposed to these fibres.

ACM can release asbestos fibres into the air whenever they are disturbed, and especially during the following activities:

- Any direct action on ACM, such as drilling, boring, cutting, filing, brushing, grinding, sanding, breaking, smashing or blowing with compressed air;
- The inspection or removal of ACM from workplaces (including vehicles, plant and equipment);
- The maintenance or servicing of materials from vehicles, plant, equipment or workplaces; or
- The renovation or demolition of buildings containing ACM.

Non-friable ACM that has been subjected to extensive weathering or deterioration also has a higher potential to release asbestos fibres into the air.

5.0 SPECIFIC REQUIREMENTS

5.1 Asbestos register and identification

Identifying asbestos or ACM is the first step in managing exposure to asbestos in the workplace.

Asbestos identification is undertaken by competent persons engaged by BAC. Where there is any uncertainty as to whether asbestos is present in any part of a structure, item of plant or land site, BAC will either arrange sampling and testing or will make an assumption as to the presence of asbestos. Any assumption that asbestos is not present will be made based on a number of factors including, but not limited to:

- Date of construction;
- Building materials; and
- Previous records regarding asbestos removal.

If it is assumed that asbestos is present, all requirements for managing asbestos will be followed, such as inclusion on the Asbestos Register and appropriate treatment actions (e.g. signage).

A competent person may also identify inaccessible areas that are likely to contain asbestos or ACM (e.g. inside fire doors, linings of pressure vessels, enclosed riser shafts, air-conditioning ducts, etc). In this situation, asbestos will be assumed to be present until such time as access to the area allows for sampling and testing to be undertaken (e.g. during maintenance).

BAC has developed an Asbestos Register, which contains information regarding ACM located in BAC buildings and other structures, as well as contaminated land sites where ACM has been identified. This Register is reviewed following any review of this Standard; or where further asbestos or ACM is identified; or where asbestos is removed from, disturbed, sealed, or enclosed at, the workplace; or otherwise at least once every five years. The Register is available on the BAC intranet. Information from this Register must be provided (as appropriate) to any contractors performing works in areas where asbestos or ACM is known to be present. Relevant information from the Register is also to be provided to tenants in BAC controlled buildings.

5.2 Labelling and signage

All identified or assumed asbestos, including where the asbestos is inaccessible, must be clearly indicated through labelling or signage.

5.2.1 Labels

If labels can be used, a competent person will determine the number and position of the labels required. The location of labels should be consistent with the location listed in the asbestos register.

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If a risk assessment suggests asbestos may be disturbed or people are likely to be exposed and it is not reasonably practicable to label asbestos directly, a prominent warning sign must be posted in its immediate vicinity (e.g. if floor tiles have been identified as containing asbestos, an appropriate warning sign may be displayed on an adjacent wall).

5.2.2 Warning signs

All warning signs must comply with AS 1319 *Safety Signs for the Occupational Environment.*

Any areas of a workplace that contain asbestos, including plant, equipment and components, should have warning signs affixed to ensure the asbestos is not unknowingly disturbed without the correct precautions being taken. Signs will be weatherproof, constructed of light-weight material and adequately secured. Signs should be placed at all the main entrances to the work areas and land where asbestos is present.

5.2.3 Examples of labels and warning signs

Examples of warning signs and labels are shown below:

Source: WHSQ How to Manage and Control Asbestos in the Workplace Code of Practice 2011

Where direct marking of asbestos is not possible, the presence and location of asbestos must be communicated to workers (such as plumbers, electricians, etc) before commencement of work. BAC's Permit to Work system facilitates this.

5.3 Asbestos-contaminated soil

Under the *Work Health and Safety Regulation 2011* (Qld) work involving asbestos-contaminated soil is not prohibited where a competent person has determined that asbestos-contaminated soil does not contain any visible ACM or friable asbestos, or if friable asbestos is visible – it does not contain more than trace levels of asbestos determined in accordance with AS 4964:2004 *Method for the qualitative identification of asbestos in bulk samples*.

Where asbestos-contaminated soil contains visible ACM or friable asbestos exceeding trace levels, the work activities associated with sampling, identification, maintenance, management, removal or disposal of the asbestos or ACM are permitted only in accordance with the WHS Regulations and this Corporate Standard.

In addition, where BAC has determined that asbestos or ACM is present or has made an assumption that it is likely to be present, works may only be carried out in accordance with this Corporate Standard.

The management of asbestos-contaminated soil controlled by BAC is undertaken collaboratively by BAC's WHS and Environment work teams. At present, management of these sites is carried out in accordance with State legislative requirements as well as the

"Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia" (version May 2009).

5.4 Controlling asbestos risks

BAC adopts the hierarchy of control in managing WHS risks, including those associated with asbestos and ACM. The ultimate goal is to have a workplace free from asbestos, however in choosing the most appropriate control measure, BAC considers a number of factors including:

- The current condition of the asbestos or ACM;
- Current controls in place at the location;
- The likelihood of the asbestos or ACM being disturbed; and
- Current and future uses of the location.

Based on a determination of the risks associated, and in consideration of specific environmental requirements for managing asbestos-contaminated sites, one or more of the controls below may be used by BAC.

5.4.1 Removal

BAC will remove asbestos or ACM that has been identified in structures or plant that will be demolished or where there is the potential for the asbestos or ACM to be disturbed by frequent maintenance works. BAC will also ensure, so far as is reasonably practicable, that asbestos or ACM is removed before refurbishment of a structure or plant. In addition, BAC will remove any asbestos or ACM that is weathered, damaged or broken.

Friable asbestos – if asbestos is friable and it has been determined that it should be removed, BAC will arrange removal by a Class A licensed removalist as soon as reasonably practicable.

Non-friable asbestos – if asbestos is non-friable, is more than 10m² and it has been determined that it should be removed, BAC will arrange removal by a licensed asbestos removalist as soon as reasonably practicable. Where it is not reasonably practicable to remove it immediately, control measures will be put in place to eliminate or minimise exposure.

5.4.2 Enclosure

If it is not reasonably practicable to remove asbestos, BAC's preferred alternative control is enclosure. This is the creation of a structure built around the asbestos so that it is completely covered to prevent exposure of the asbestos to air and other substances.

Regular inspections must be undertaken by a competent person to monitor the condition of enclosed asbestos or ACM as well as the efficacy of the control measure.

5.4.3 Encapsulation and Sealing

If it is not reasonably practicable to remove or enclose asbestos or ACM, encapsulation or sealing is the next appropriate control measure.

Encapsulation is carried out using a resilient matrix (such as plastic, vinyl, resin, cement, etc.) that seals loose fibres into place. BAC will only use this method of control where the original asbestos bond is still intact and where it would create a greater risk to remove the asbestos.

Encapsulation of asbestos-contaminated soil is undertaken on a case by case basis in consultation with the WHS and Employee Relations Manager and the Environment Manager.

Sealing involves covering the surface of the material with a protective coating to prevent exposure to airborne asbestos. Sealing is the least effective method of control for the release of airborne asbestos and BAC uses this as an interim control until a more effective form of control can be implemented.

5.5 Working on or near asbestos

The *Work Health and Safety Regulation 2011* (Qld) and the WHSQ *How to Manage and Control Asbestos in the Workplace Code of Practice 2011* provide detailed information on requirements for people who performing work on asbestos or ACM. Work on ACM includes maintenance, cleaning and repair activities that have the potential to disturb ACM and release fibres into the atmosphere.

5.5.1 Planning work

In planning for the conduct of work activities, the BAC Works Manager must identify whether asbestos risks may exist for the particular task by consulting the Asbestos Register. If no ACM has been identified or assumed to be present, the work can continue in accordance with the applicable work procedure.

If ACM has been identified or assumed to be present, the contractor must apply for a high risk activity permit (Asbestos Permit) to carry out the work.

5.5.2 Performing work

The BAC Works Manager must ensure that no work is performed on or near ACM without a current and approved Asbestos Permit.

Work performed on or near ACM must be reported to the WHS and Employee Relations Manager to ensure the asbestos register is kept up-to-date.

5.5.2.1. Asbestos Permit to Work

The asbestos permit is designed to ensure appropriate work practices are employed by BAC contractors in the vicinity of ACM. The Permit documents what ACM is to be removed, encapsulated or otherwise protected prior to the works proceeding. The Asbestos Permit also indicates other requirements such as the need for personal protective equipment (PPE), barricading and airborne fibre monitoring.

An Asbestos Permit will only be issued to competent workers.

5.5.2.2. Asbestos removal work

Detailed obligations regarding the removal of asbestos are documented in the WHSQ How to Safely Remove Asbestos Code of Practice 2011. Specific requirements of BAC Works Managers in managing this particular work activity are outlined further below.

<u>Asbestos removal control plan</u>

The WHS Regulations require licensed asbestos removalists to prepare an asbestos removal control plan for any licensed asbestos removal work they are commissioned to undertake. The asbestos removal control plan should be prepared in consultation with BAC, workers and health and safety representatives.

A copy of the asbestos removal control plan must be provided to the BAC Works Manager and must also be readily available to any workers and other businesses in the vicinity of the works.

The BAC Works Manager must review the asbestos removal control plan in accordance with, and prior to issuing, an Asbestos Permit.

<u>Notification to the regulator</u>

A licensed asbestos removalist must notify WHSQ in writing at least five days before commencement of work. WHSQ Form 65 (Notification of licensed asbestos removal work) is used for this purpose.

In limited circumstances removal work may commence immediately. In these situations, the licensed asbestos removalist must notify WHSQ by telephone and follow up in writing within 24 hours.

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BAC Works Managers must confirm this notification has occurred by ensuring a copy of the notification has been attached to the contractor's application for an Asbestos Permit.

Access, signage and barricading

Where BAC has commissioned asbestos removal work, the BAC Works Manager must ensure that access to the removal area is limited to:

- Workers who are engaged to carry out the removal work;
- Other people associated with the removal work;
- People permitted by law to be in the asbestos removal area (e.g. WHSQ Inspectors, emergency service workers).

A combination of signs and barricades may be necessary to limit access. The person carrying out the removal work must erect signs to indicate where the asbestos removal work is being carried out as well as barricades to delineate the asbestos area.

Clearance inspection

The BAC Works Manager must arrange for a clearance inspection to be carried out after licenced asbestos removal work has been completed. The clearance certificate must be issued before the workplace can be re-occupied. A clearance certificate can only be carried out by:

- An independent licensed asbestos assessor, for work that must be carried out by a Class A licensed asbestos removalist;
- An independent competent person, for asbestos work that is not required to be carried out by a Class A licensed asbestos removalist.

To be "independent", the licensed asbestos assessor or competent person must not be involved in the removal of asbestos for that specific job and must not be involved in a business or undertaking involved in the removal of the asbestos for that specific job.

A copy of the clearance certificate must be obtained and forwarded to the WHS and Employee Relations Manager to allow the Asbestos Register to be reviewed.

Air monitoring

Air monitoring requirements will vary based on the type of asbestos being removed, the location and position (including whether the asbestos is within a building or outside). BAC Works Managers must consider the following requirements in determining the acceptability of an asbestos removal plan and before issuing an Asbestos Permit for asbestos removal works:

Removal work type	Air monitoring requirement
Friable asbestos removal	Mandatory (required by law).
More than 10m² of non-friable asbestos removal	Not mandatory, but may be considered to eliminate or minimise exposure to airborne asbestos.
Public location	Air monitoring should be considered where asbestos removal work is being undertaken in or next to a public location.

The BAC Works Manager must ensure any results from air monitoring are given to workers at the workplace, HSR's, other businesses and other persons at the workplace.

5.5.2.3. Asbestos-related work

Asbestos-related work (including maintenance/service work, management of in-situ asbestos and sampling/identification) may only be carried out if certain requirements are met. Section 3 of the Asbestos Permit outlines the specific requirements for asbestos-related work.

The permit application must have a Safe Work Method Statement (SWMS) attached that is specific to the work being undertaken and meets the minimum requirements outlined in Section 3 of the Asbestos Permit.

Where a BAC employee is performing work on or near ACM, the work group supervisor must ensure that a documented SWMS is prepared and approved for the activity and that adherence to the SWMS is monitored.

5.6 Asbestos incident processes

Incidents relating to asbestos or ACM are to be recorded, investigated and documented in accordance with BAC's WHS Incident Management and Investigation Procedure.

5.6.1 Emergency situations

Where friable ACM is disturbed and creates an immediate risk to the health of workers, visitors and/or members of the public, the following actions are to be taken:

1. First responder/person on site will evacuate all people from the location;
2. First responder/person on site will seal off or otherwise isolate the area;
3. First responder/person on site will advise the WHS and Employee Relations Manager;
4. First responder/person on site will institute access restriction procedures;
5. The WHS and Employee Relations Manager (in consultation with the Building Facilities Manager and, in the case of land contamination, the Environment Manager) will determine "clean-up" or other remedial action, and engage licenced asbestos removalists where required;
6. Engaged competent persons will undertake appropriate remedial action followed by air monitoring to determine no remaining exposure;
7. Workers and other persons will not be permitted to re-enter the work area until a competent person has provided clearance.
8. The WHS and Employee Relations Manager (in consultation with the Building Facilities Manager and/or the Environment Manager) will update the Asbestos Register as appropriate.

5.6.2 Discovery of suspected asbestos or ACM not previously identified

Where potential asbestos or ACM is discovered in an area not previously identified as containing these, and where there is no immediate risk to the health and wellbeing of workers or others, the following actions are to be taken:

1. Person discovering the suspected asbestos or ACM must immediately contact the WHS and Employee Relations Manager;
2. The WHS and Employee Relations Manager will notify the Buildings Facilities Manager and, in the event of land contamination, the Environment Manager;
3. The person making the discovery must isolate the area by erecting barriers or otherwise ensuring access to the area is restricted;
4. The WHS and Employee Relations Manager (in consultation with the Buildings Facilities Manager and/or the Environment Manager) will arrange for the material to be sampled and analysed by a NATA-accredited laboratory. (Note: in the case of a Principal Contractor controlled site, this will be arranged by the Principal Contractor in consultation with BAC);
5. Following receipt of the results, the WHS and Employee Relations Manager, Building Facilities Manager and, in the event of land contamination, the Environment Manager will determine appropriate remedial actions and ensure competent persons are engaged (as applicable) to undertake these;

6. Following completion of the remedial actions and receipt of any clearance certificates, the WHS and Employee Relations Manager (in consultation with the Building Facilities Manager and/or the Environment Manager) will review and revise the Asbestos Register.

5.6.3 Building or work site evacuation during asbestos work

During the course of asbestos work, external events may necessitate a full or partial evacuation of a building or work site. These events may include, but are not limited to:

- Fire evacuation;
- Security breach or threat;
- Aviation safety incident; or
- Chemical spill/contamination.

Decontamination procedures can be temporarily waived in the event of an emergency event requiring evacuation of a building or work site. This should be based on an informal risk assessment conducted at the time by the persons in control of the work activities (generally the specialist contractor). If evacuation is deemed to be required, the following actions must be taken:

1. Workers involved in asbestos work must evacuate to the nominated evacuation assembly point but remain downwind to ensure any fibres remaining on clothes (as a result of not decontaminating completely) do not enter the breathing space of others.
2. On arriving at the assembly point, workers must notify emergency wardens of the status of work and the assessed level of risk associated as well as the level of risk associated with asbestos workers not undergoing the complete decontamination process.

5.7 Principal Contractor Works

Due to the nature of the risks involved with asbestos and ACM, the management processes set out in this Corporate Standard apply to all contracted work activities, including where a principal contractor has been engaged to perform the work.

BAC Works Managers must provide relevant extracts from the Asbestos Register to the Principal Contractor, who must ensure that appropriate controls are incorporated into the work health and safety management plan (WHSMP) for the construction project.

In accordance with BAC's Contractor Management Corporate Standard, the WHSMP must be reviewed and accepted by BAC (with involvement from BAC's WHS and Environment teams where known or potential asbestos or ACM contamination has been identified as a risk).

The emergency processes relating to asbestos/ACM outlined in this Corporate Standard must be included in the WHSMP.

Where asbestos/ACM contamination is identified on site during works, control and/or remediation activities are to be undertaken only as approved by BAC as evidenced by the issue of a Permit to Work for the remediation activities.

6.0 TRAINING and AWARENESS

BAC workers (in particular Works Managers, operational staff and contractors who may come into contact with ACM or be required to coordinate removal of, or works on or near, asbestos or ACM) will receive general training regarding asbestos and ACM and be informed of the locations where these are known or assumed to present as well as health risks associated with exposure to airborne asbestos fibres. Initial training and ongoing refresher training will also cover hazards associated with asbestos and ACM and BAC's procedures for managing these.

All persons engaged by BAC to carry out asbestos removal works, or to conduct work on or near asbestos are required to be trained and competent (e.g. appropriately licenced) to be able to carry out the specific type of asbestos work to be undertaken. BAC Works Managers will require evidence of competency to be provided by contractors before an Asbestos Permit will be issued. In addition, persons carrying out works on or near asbestos or ACM or conducting any earthworks at Brisbane Airport (including Principal Contractors and their workers) must complete the Asbestos module of BAC's contractor induction program.

7.0 RESPONSIBILITIES

BAC Senior Managers

- Ensure adequate resources (time, equipment and personnel) are allocated for the effective implementation of this Corporate Standard.

BAC WHS and Employee Relations Manager

- Maintain the currency and accuracy of this Corporate Standard, and the associated Asbestos Register, reflective of legislative requirements and BAC needs.
- Liaise with the Buildings Facilities Manager and Environment Manager in relation to management of asbestos and ACM at Brisbane Airport.
- Ensure the audit and review activities specified within this Corporate Standard are undertaken and any identified non-compliances addressed.

BAC Works Managers

- Ensure asbestos-related works are carried out in accordance with this Corporate Standard.

BAC Property Managers

- Advise the WHS and Employee Relations Manager or Buildings Facilities Manager on expiry of a tenant's lease, where control of a building or site will revert to BAC.

8.0 REVIEW DATE

This Corporate Standard will be reviewed and updated:

- at least every five years; or
- when there is a review of the asbestos register or control measure; or
- asbestos is removed from, or disturbed, sealed or enclosed at, the workplace; or
- the plan is no longer adequate for managing asbestos or ACM at the workplace; or
- if requested by a health and safety representative; or
- where control of a building or site reverts back to BAC (e.g. on expiry of lease); or
- otherwise as required to reflect changes in legislation, BAC's risk profile or operational needs.

9.0 REFERENCES

External

- *Work Health and Safety Act 2011* (Qld)
- *Work Health and Safety Regulation 2011*(Qld)
- *WHSQ How to Safely Remove Asbestos Code of Practice 2011*
- WHSQ How to Manage and Control Asbestos in the Workplace Code of Practice 2011

- Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (May 2009)

Internal

- Asbestos Permit
- WHS Incident Management and Investigation Procedure
- Asbestos module (contractor induction)
- Contractor Management Corporate Standard

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APPENDIX C

Example Forms

Asbestos Identification Report Form

Report No.:		**Date & Time:**	
Reported by:		**Company/ Position:**	
Reported to:		**Witnesses:** (include Company/ position)	
INCIDENT DETAILS			
Incident Type (Circle)	ACM Identification	HSE Incident	Complaint
Description (including Site & location):			

RISK ASSESSMENT (circle or complete as required)		
Type of ACM	Friable	Non Friable
Quantity	Number of fragments/sheets:	
	Kilograms (approximately)	
Product Stability (i.e. potential for deterioration)	Stable	Unstable
Potential for Disturbance	Low	High
Potential for Airborne Fibres	Low	High
Factors contributing to WH&S incident or Complaint:		

RISK MANAGEMENT	
ACM Management Pathway	Friable ACM
	Non Friable ACM

Corrective Actions Actions are to be itemised here and timeline for completion included.	**Responsible Person**

Sign Off:	**Comments:**
Responsible Person (e.g. Nominated Person)	Date:
Site Manager:	Date:

Complaint Register Form

Date	Issue / Complaint	Reported by	Action Taken	
			Action	Date

Site Manager:

Date:

APPENDIX D

Study Limitations

LIMITATIONS

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Appendix H
Likelihood of occurrence assessment

Appendix H

Assessment of conservation significant species

Table 1 Likelihood of conservation significant flora occurring within the Project site

Scientific name	Common name	Conservation status		Source of record	Likelihood of occurrence
		NC Act	EPBC Act		
Arthraxon hispidus	Hairy-joint Grass	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat in the form of fresh water wetlands is generally absent from this location.
Bosistoa transversa	Three-leaved Bosistoa, Yellow Satinheart	Least concern	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat of rainforest and closed forest is absent from this location.
Cryptocarya foetida	Stinking Cryptocarya, Stinking Laurel	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat of rainforest and closed forest is absent from this location.
Dichanthium setosum	Bluegrass	Least concern	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat in the form of basalt derived fertile “black-soils” is absent from this location
Macadamia integrifolia	Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat of rainforest and closed forest is absent from this location.
Macadamia tetraphylla	Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat of rainforest and closed forest is absent from this location.
Phaius australis	Lesser swamp-orchid	Endangered	Endangered	EPBC Protected Matters Search	**Unlikely**. Suitable habitat in the form of freshwater wetlands dominated by *Melaleuca quinquenervia* is absent from this location.
Samadera bidwillii	Quassia	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat of rainforest and closed forest is absent from this location.

Scientific name	Common name	Conservation status		Source of record	Likelihood of occurrence
		NC Act	EPBC Act		
Thesium australe	Austral Toadflax, Toadflax	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Suitable habitat in the form of basalt derived “black-soils” and suitable host species (ie *Dichanthium sericium* and *Themeda triandra*) are not present in sufficient numbers to provide habitat for this species.

Table 2 Likelihood of conservation significant fauna occurring within the Project site

Scientific name	Common name	Conservation status		Source of record	Likelihood of occurrence
		NC Act	EPBC Act		
Birds					
Anthochaera phrygia	Regent honeyeater	Endangered	Critically endangered	EPBC Protected Matters Search	**Unlikely**. The preferred habitat and foraging trees are absent from this location. The site is dominated by *Casuarina glauca* which do not provide habitat for this species.
Botaurus poiciloptilus	Australasian bittern	Least concern	Endangered	EPBC Protected Matters Search	**Possible**. Areas containing *Phragmites* and *Typha* associated with freshwater wetland areas have potential to provide habitat for this species.
Charadrius mongolus	Lesser sand plover	Special least concern	Endangered	Wildlife Online	**Unlikely**. Preferred habitat of tidal mudflats and sandflats is generally absent from this location.
Calidris ferruginea	Curlew sandpiper	Special least concern	Critically endangered	Wildlife Online, EPBC Protected Matters Search	**Unlikely**. Preferred habitat of tidal mudflats and sandflats is generally absent from this location.
Calidris canutus	Red knot	Special least concern	Endangered	Wildlife Online	**Possible**. Preferred habitat of marine wetlands and salt marsh is present at this location
Dasyornis brachypterus	Eastern bristlebird	Endangered	Endangered	EPBC Protected Matters Search	**Unlikely**. Preferred habitat of dense heath, woodland or tea-tree is absent from this location
Erythrotriorchis radiatus	Red goshawk	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat of open forest, woodland and rainforest margins is absent from this location.
Geophaps scripta scripta	Squatter Pigeon (southern)	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Unlikely**. The site is located outside of the species known distribution and does not contain grasses that would provide a food source for this species.
Lathamus discolor	Swift parrot	Endangered	Critically endangered	EPBC Protected Matters Search	**Unlikely**. The site does not contain suitable food species (ie flowering eucalypts) in sufficient densities to act as habitat for this species.
Limosa lapponica baueri	Western Alaskan bar-tailed godwit	Special least concern	Vulnerable	Wildlife Online, EPBC Protected Matters Search	**Possible**. Preferred habitat of marine wetlands and salt marsh is present at this location.
Numenius madagascariensis	Eastern curlew	Vulnerable	Critically endangered	Wildlife Online, EPBC Protected Matters Search	**Possible**. Preferred habitat, in the form of mangroves, saltmarshes and estuarine wetlands, is present at this location.
Pachyptila turtur sub-antarctica	Fairy Prion (southern)	Least concern	Vulnerable	EPBC Protected Matters Search	**Unlikely**. This is a marine species that only returns to land to nest. Suitable nesting sites are not present at this location.

Scientific name	Common name	Conservation status		Source of record	Likelihood of occurrence
		NC Act	EPBC Act		
Poephila cincta cincta	Southern Black-throated Finch	Endangered	Endangered	EPBC Protected Matters Search	**Unlikely**. Suitable habitat, in the form of grassy scrubland and woodland near fresh water, is absent from this location.
Rostratula australis	Australian painted snipe	Vulnerable	Endangered	EPBC Protected Matters Search	**Possible**. Preferred habitat, in the form of well vegetated shallows and margins of wetlands, is present at this location.
Turnix melanogaster	Black-breasted Button-quail	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat, in the form of rainforest or vine thickets, is absent from this location.
Reptiles					
Delma torquata	Adorned delma, Collared delma	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat, in the form of areas dominated by broad-leaved ironbark with a native grassy understory with small surface rocks, is absent from this location.
Saiphos reticulatus	Three-toed snake-tooth skink	Least concern	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat of this species consists of rainforest and vine scrub, which is absent from this location.
Mammals					
Chalinolobus dwyeri	Large-eared pied bat, Large pied bat	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat, in the form of sandstone cliffs and fertile woodland valleys, is absent from this location.
Dasyurus hallucatus	Northern Quoll, Digul	Least concern	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat, in the form of rocky areas associated with vine thickets or open forest, was not present within the Project site.
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (south-eastern mainland population)	Vulnerable	Endangered	EPBC Protected Matters Search	**Unlikely**. Preferred habitat, in the form of rocky areas associated with vine thickets or open forest, was not present within the Project site.
Petauroides volans	Greater glider	Least concern	Vulnerable	EPBC Protected Matters Search	**Unlikely**. Preferred habitat trees in the form of *Eucalyptus*, *Lophostemon* and *Corymbia* are relatively rare at this location. In addition, hollows suitable to act as a refuge for this species were not observed at this location.
Phascolarctos cinereus	Koala	Vulnerable	Vulnerable	Wildlife Online, EPBC Protected Matters Search	**Unlikely**. Preferred habitat trees in the form of *Eucalyptus*, *Lophostemon* and *Corymbia* are relatively rare at this location.
Pteropus poliocephalus	Grey-headed flying-fox	Least concern	Vulnerable	Wildlife Online, EPBC Protected Matters Search	**Possible**. This species may browse on flowering eucalypts and melaleuca species located within and adjacent to the Project site. No camp of this species were identified the Project site.

Scientific name	Common name	Conservation status		Source of record	Likelihood of occurrence
		NC Act	EPBC Act		
Xeromys myoides	Water mouse, False water rat, Yirrkoo	Vulnerable	Vulnerable	EPBC Protected Matters Search	**Possible**. Preferred habitat, in the form of extensive areas of mangroves, was present with the Project site. However, freshwater drains leading into large areas of Yellow mangroves, which are the preferred habitat of this species, were not observed. In addition, no evidence of “mounds” of middens of this species were identified onsite.

Appendix I
Flora and fauna species list

Appendix I

Observed flora and fauna species

Table 1 Flora species identified within the Project site during field investigations

Family	Scientific name	Common name	NC Act status	EPBC status	Comments
Aizoaceae	*Tetragonia tetragonoides*	New Zealand spinach	Least concern	Not listed	Marine species
Anacardiaceae	*Schinus terebinthifolius*	Broad-leaved pepper	Not listed	Not listed	Non-native, Schedule 2 plant
Apiaceae	*Centella asiatica*	Centella	Least concern	Not listed	
Apocynaceae	*Parsonsia straminea*	Monkey rope	Least concern	Not listed	
Araliaceae	*Schefflera actinophylla*	Umbrella tree	Least concern	Not listed	
Asparagaceae	*Asparagus aethiopicus*	Basket asparagus fern	Not listed	Not listed	Non-native, Schedule 2 plant
Asparagaceae	*Asparagus plumosus*	Feathered asparagus fern	Not listed	Not listed	Non-native, Schedule 2 plant
Asteraceae	*Acanthospermum hispidum*	Star burr	Not listed	Not listed	Non-native
Asteraceae	*Ambrosia artemisiifolia*	Annual ragweed	Not listed	Not listed	Non-native, Schedule 2 plant
Asteraceae	*Baccharis halimifolia*	Groundsel bush	Not listed	Not listed	Non-native, Schedule 2 plant
Asteraceae	*Conyza canadensis*	Fleabane	Not listed	Not listed	Non-native
Asteraceae	*Pseudognaphalium luteoalbum*	Jersey cudweed	Least concern	Not listed	
Asteraceae	*Sigesbeckia orientalis*	Indian weed	Least concern	Not listed	
Avicenniaceae	*Avicennia marina*	Grey managrove	Least concern	Not listed	Marine species
Bignoniaceae	*Dolichandra unguis-cati*	Cat's claw creeper	Not listed	Not listed	Non-native, Schedule 2 plant
Caryophyllaceae	*Stellaria media*	Chickweed	Not listed	Not listed	Non-native
Casuarinaceae	*Casuarina glauca*	Swamp she-oak	Least concern	Not listed	Marine species
Chenopodiaceae	*Einadia hastata*	Berry saltbush	Least concern	Not listed	Marine species
Chenopodiaceae	*Enchylaena tomentosa*	Ruby saltbush	Least concern	Not listed	Marine species
Chenopodiaceae	*Suaeda arbusculoides*	Jelly-bean plant	Least concern	Not listed	Marine species
Convolvulaceae	*Ipomoea cairica*	Mile-a-minute	Not listed	Not listed	Non-native
Cyperaceae	*Baumea rubiginosa*	Soft twigrush	Least concern	Not listed	

Family	Scientific name	Common name	NC Act status	EPBC status	Comments
Euphorbiaceae	*Macaranga tanarius*	Macaranga	Least concern	Not listed	
Euphorbiaceae	*Ricinus communis*	Castor oil bush	Not listed	Not listed	Non-native
Fabaceae	*Macroptilium atropurpureum*	Siratro	Not listed	Not listed	Non-native
Fabaceae	*Macroptilium lathyroides*	Phus pea	Not listed	Not listed	Non-native
Fabaceae	*Sesbania cannabina*	Sesbania pea	Least concern	Not listed	
Hemerocallidaceae	*Dianella caerulea*	Blue flax lily	Least concern	Not listed	
Malvaceae	*Hibiscus tiliaceus*	Cotton tree	Least concern	Not listed	
Malvaceae	*Sida cordifolia*	Flannel weed	Not listed	Not listed	Non-native
Malvaceae	*Sida hackettiana*	Sida	Least concern	Not listed	
Malvaceae	*Sida rhombifolia*	Paddy's Lucerne	Not listed	Not listed	Non-native
Mimosaceae	*Acacia leiocalyx*	Black wattle	Least concern	Not listed	
Mimosaceae	*Acacia maidenii*	Maiden's wattle	Least concern	Not listed	
Mimosaceae	*Leucaena leucocephala*	Leucaena	Not listed	Not listed	Non-native
Moraceae	*Maclura cochinchinensis*	Cockspur thorn	Least concern	Not listed	
Myrtaceae	*Corymbia tessellaris*	Moreton Bay ash	Least concern	Not listed	
Myrtaceae	*Corymbia torelliana*	Cadaghi	Least concern	Not listed	
Myrtaceae	*Eucalyptus tereticornis*	Queensland blue gum	Least concern	Not listed	
Myrtaceae	*Melaleuca leucadendra*	Broad-leaved tea-tree	Least concern	Not listed	
Myrtaceae	*Melaleuca quinquenervia*	Swamp paperbark	Least concern	Not listed	
Myrtaceae	*Melaleuca saligna*	Bottlebrush	Least concern	Not listed	
Passifloraceae	*Passiflora foetida*	Stinking passion-flower	Not listed	Not listed	Non-native
Petiveriaceae	*Rivina humilis*	Little pepper	Not listed	Not listed	Non-native
Phyllanthaceae	*Glochidion sumatranum*	Umbrella cheese tree	Least concern	Not listed	
Poaceae	*Chloris gayana*	Rhodes grass	Not listed	Not listed	Non-native
Poaceae	*Cynodon dactylon*	Couch grass	Not listed	Not listed	Non-native
Poaceae	*Eragrostis tenuifolia*	Elastic grass	Not listed	Not listed	Non-native
Poaceae	*Megathyrsus maximus*	Green panic	Not listed	Not listed	Non-native

Family	Scientific name	Common name	NC Act status	EPBC status	Comments
Poaceae	*Melinis repens*	Red natal grass	Not listed	Not listed	Non-native
Poaceae	*Paspalum vaginatum*	Saltwater couch	Least concern	Not listed	Marine species
Poaceae	*Phragmites australis*	Common reed	Least concern	Not listed	Marine species
Poaceae	*Setaria verticillata*	Whorled pigeon grass	Not listed	Not listed	
Poaceae	*Urochloa decumbens*	Signal grass	Not listed	Not listed	Non-native
Poaceae	*Urochloa mutica*	Para grass	Not listed	Not listed	Non-native
Polygonaceae	*Persicaria decipiens*	Slender knotweed	Least concern	Not listed	
Rhamnaceae	*Alphitonia excelsa*	Soap tree	Least concern	Not listed	
Rhizophoraceae	*Ceriops tagal*	Yellow mangrove	Least concern	Not listed	Marine species
Sapindaceae	*Cupaniopsis anacardioides*	Tuckeroo	Least concern	Not listed	
Solanaceae	*Solanum americanum*	Nightshade	Least concern	Not listed	
Solanaceae	*Solanum mauritianum*	Wild tobacco	Not listed	Not listed	Non-native
Solanaceae	*Solanum seaforthianum*	Brazilian nightshade	Not listed	Not listed	Non-native
Typhaceae	*Typha orientalis*	Broad-leaved cumbungi	Least concern	Not listed	
Ulmaceae	*Celtis sinensis*	Chinese elm	Not listed	Not listed	Non-native, Schedule 2 plant
Verbenaceae	*Lantana camara*	Lantana	Not listed	Not listed	Non-native, Schedule 2 plant
Verbenaceae	*Verbena litoralis*	Verbena	Not listed	Not listed	Non-native
Verbenaceae	*Verbena rigida*	Verbena	Not listed	Not listed	Non-native

Table 2 Fauna species identified within the Project site during field investigations

Family	Scientific name	Common name	NCA status	EPBC status	Comments
Birds					
Acanthizidae	*Smicrornis brevirostris*	Weebill	Least concern	Not listed	
Anatidae	*Anas castanea*	Chestnut teal	Least concern	Not listed	
Anatidae	*Anas gracilis*	Grey teal	Least concern	Not listed	
Anatidae	*Anas superciliosa*	Pacific black duck	Least concern	Not listed	
Ardeidae	*Egretta novaehollandiae*	White-faced heron	Least concern	Not listed	
Columbidae	*Phaps chalcoptera*	Common bronzewing	Least concern	Not listed	
Estrildidae	*Taeniopygia bichenovii*	Double-barred finch	Least concern	Not listed	
Meliphagidae	*Lichmera indistincta*	Brown honeyeater	Least concern	Not listed	
Meropidae	*Merops ornatus*	Rainbow bee-eater	Special least concern	Marine	Marine species
Oriolidae	*Sphecotheres vieilloti*	Australasian fig bird	Least concern	Not listed	
Phalacrocoracidae	*Microcarbo melanoleucos*	Little pied cormorant	Least concern	Not listed	
Rhipiduridae	*Rhipidura leucophrys*	Willie wagtail	Least concern	Not listed	
Threskiornithidae	*Threskiornis molucca*	Australian white ibis	Least concern	Not listed	
Timaliidae	*Zosterops lateralis*	Silvereye	Least concern	Not listed	
Reptiles					
Scincidae	*Cryptoblepherus virgatus*	Striped snake-eyed skink	Least concern	Not listed	

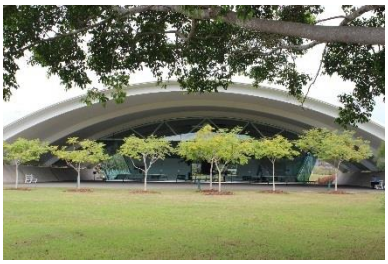
Appendix J
Brisbane Airport Auto Mall Heritage Report

Brisbane Airport Auto Mall

Brisbane Airport Corporation

Report for Aurecon

June, 2017



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Executive Summary

The historic heritage report assesses the nature and significance of the historic heritage resource for the Auto Mall Project (the Project) at the Brisbane Airport. Recommendations for management of known and potential sites are provided. This report includes:

- A review of historic heritage databases and registers, existing studies, publications and reports with relevance to the project area.
- The nature of cultural heritage significance of the whole proposed development area and the sites noted during the abovementioned assessment.
- Specific management and mitigation recommendations for the identified historic heritage in the project area.
- Specific management recommendations for additional historic heritage sites and places which potentially exist within the project area and which have not, to date, been assessed and/or identified as requiring assessment.

Identified Historic Heritage Places

Searches of the relevant databases and registers revealed that the project area does not contain any registered historic heritage sites. No sites were identified by the assessment within the project area. Refer to Section 2.2 Heritage Searches for details of sites located near the project area.

The only site, though not heritage listed that will require historic heritage management throughout the project is the Kingsford Smith Memorial.

Significance Assessment for the Project Area

The historic heritage significance of the entire project area was evaluated using recognised benchmarks such as the *Burra Charter* and *Queensland Heritage Act 1992*. Results are provided in Section 3.

Impact Assessment and Mitigation Measures

The impact assessment for historic heritage in the project area concluded that no significant historic heritage sites will be impacted by the project. There is, however, a low potential for further historic sites/items to exist within the project area.

The historic heritage management recommendations will be implemented and incorporated into the project's Environmental Management Plan (EMP) to mitigate project impacts on unidentified historic heritage material/sites found during the development of the project.

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Glossary of Terms

Acronym	Meaning
AHPI	Australian Heritage Places Inventory
BAC	Brisbane Airport Corporation
CHL	Commonwealth Heritage List
DEHP	Department of Environment and Heritage Protection
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
EMP	Environmental Management Plan
EPBC Act	*Environment Protection Biodiversity and Conservation Act 1999*
ICOMOS	International Council on Monuments and Sites
NHL	National Heritage List
OUV	Outstanding Universal Value
RNE	(former) Register of the National Estate
QH Act	*Queensland Heritage Act 1992*
QHC	Queensland Heritage Council
QHR	Queensland Heritage Register
QNT	Queensland National Trust
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WHL	World Heritage List

1 Introduction

1.1 Project Overview

The Project involves the development of a multi-purpose automotive precinct accommodating a range of facilities situated around a centrally located 2.5 km test track within the 51 ha International Precinct site which is currently vacant land. The project includes the design and construction of bulk earthworks, roads and services and the test track. The physical works of the Project includes land clearing, bulk earthworks, ground improvement and site preparation in readiness for infrastructure works including roads and services and test track (BAC 2017: 3).

The site is a 51-ha parcel of undeveloped low lying bushland enclosed by Moreton Drive, Airport Drive and Nancy Bird Way and located near the Brisbane International Terminal (Airport Central Precinct). The proposed land parcel nominated excludes the Kingsford Smith Memorial and surrounding area reserved for a future realignment of Airport Drive. The Project will involve upgrading of drainage through the Banksia Place precinct and modification to several existing drainage structures under the surrounding roadways, including Moreton Drive, Airport Drive and Nancy Bird Way (BAC 2017: 4).

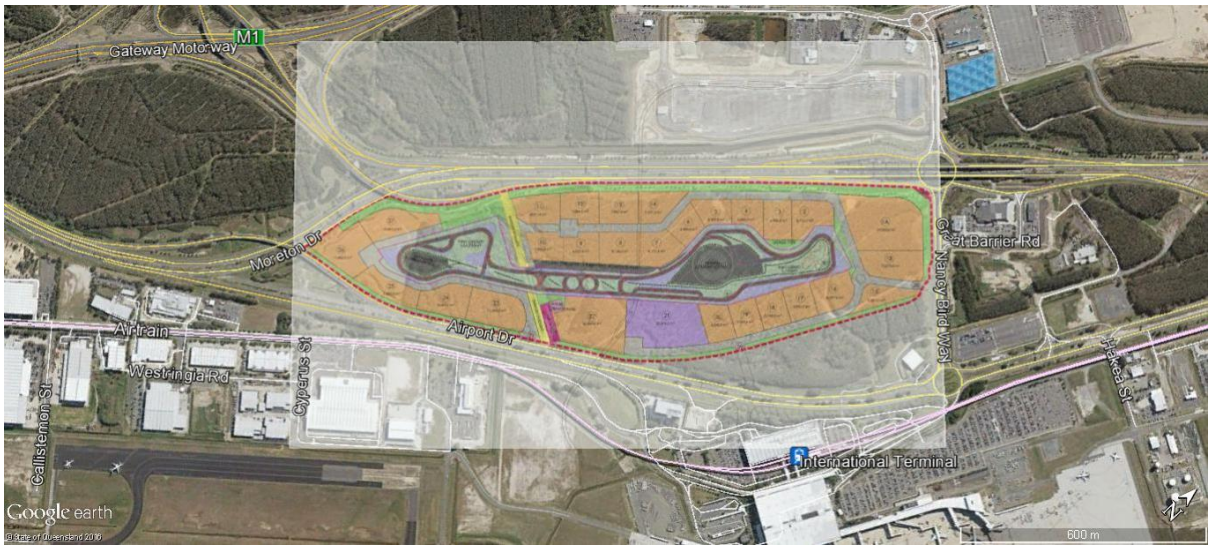

Figure 1: Location of project (Google Earth Pro 2017).

1.2 Methodology

The following methodology was employed to follow best practice and legislative framework for historic heritage management in Queensland.

1.2.1 Desktop Assessment

A desktop assessment was undertaken to determine the existence, extent and probable levels of significance of any places likely to be located within the project area. This assessment comprised searches of statutory and non-statutory registers and databases, and a review of existing published and unpublished reports, surveys and assessments of the project area and its immediate surroundings (refer to Section 2, Existing Conditions). The results of this desktop assessment informed the assessment provided in this report.

1.2.2 Significance Criteria

Determining the significance of a heritage place, item or site requires research to enable an understanding of its value or level of importance. Assessments of heritage significance for this assessment were based on an understanding of the place's history together with the physical analysis (field survey) and an appreciation of the comparative level of rarity or representativeness that the site possesses. In Queensland, heritage practitioners rely on two key documents to undertake significance assessments: *The Burra Charter of Australia International Council on Monuments and Sites* (Australia ICOMOS) and the *Queensland Heritage Act 1992.*

The *Queensland Heritage Act 1992* (QH Act) outlines the following criteria for assessing cultural significance of heritage places. Under Section 35 (1) of the QH Act, a place may be entered into the register if it satisfies one or more of the following criteria:

A. If the place is important in demonstrating the evolution or pattern of Queensland's history;
B. If the place demonstrates rare, uncommon or endangered aspects of Queensland's cultural heritage;
C. If the place has potential to yield information that will contribute to an understanding of Queensland's history;
D. If the place is important in demonstrating the principal characteristics of a particular class of cultural places;
E. If the place is important because of its aesthetic significance;
F. If the place is important in demonstrating a high degree of creative or technical achievement at a particular period;
G. If the place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
H. If the place has a special association with the life or work of a particular person, group or organisation of importance in Queensland's history.

The criteria used for assessing places of local heritage significance under the *Brisbane City Plan 2014* mirrors the criteria developed under the QH Act, except that a site's significance relates to the shire or locality rather than the state. Once a site has been assessed using the above-listed QHA criteria, the following thresholds are applied to determine the level (i.e. local, state or national) at which the place or element is considered significant:

Table 1: Hierarchy of Significance.

Definition	Threshold
Element of exceptional significance or heritage value - embodies national or state heritage significance and makes an irreplaceable contribution to the significance/heritage value of the place.	Likely to fulfil national heritage entry criteria.
Element of high significance or heritage value - embodies state heritage significance and makes an irreplaceable contribution to the significance/heritage value of the place.	Likely to fulfil state heritage entry criteria.
Element of moderate significance or heritage value - embodies state or local heritage values and makes an irreplaceable contribution to the values of the place.	Likely to fulfil state and/or local heritage entry criteria
Element of some significance or heritage value - embodies local heritage values and makes a significant contribution to the significance/heritage value of the place.	Likely to fulfil local heritage entry criteria

Definition	Threshold
Element has low heritage value but may contribute to other elements of heritage value.	Unlikely to fulfil local heritage entry criteria.
Intrusive element which detracts, or has the potential to detract, from the significance of the place.	Does not have heritage value.

Section 3, Significance Assessment, presents the results of the significance assessment of the project area. The results from the significance assessment informed the impact assessment (refer to Section 4, Impact Assessment), recommendations and management strategies for management of identified and potential historic heritage in the project area (refer to Section 5, Management Measures).

1.3 Legislative Framework

Knowledge of cultural heritage legislation is essential when assessing sites, places or items of cultural heritage significance. The project area is affected by several statutory controls which must be considered prior to site development. Searches of relevant statutory registers associated with national, state and local legislation were undertaken as part of this study. Places included on these registers possess an established level of significance. It is important to note, however, that the absence of a place on these registers does not mean it has no heritage significance. Not all places of heritage significance in Australia have been identified and/or listed yet, particularly places of archaeological significance. Moreover, values can change and evolve, and places may take on new or different heritage significance according to these values, or the passage of time.

1.3.1 Statutory Legislation

National Legislation

The EPBC Act is the key national heritage legislation and is administered by the Commonwealth Department of Environment (DoE). The EPBC Act provides a number of statutory controls for heritage places. Places of national heritage value and those owned or managed by the Commonwealth are located on the National Heritage List (NHL) and Commonwealth Heritage List (CHL) respectively. In addition, the following national legislation is relevant to heritage:

- *The Protection of Moveable Cultural Heritage Act, 1986* regulates the export of Australia's significant cultural heritage objects. The Act does not restrict normal and legitimate trade in cultural property and does not affect an individual's right to own or sell within Australia; and

- *The Australian Heritage Council Act, 2003* provides for the establishment of the Australian Heritage Council, which is the principal advisory group to the Australian Government on heritage matters. This Act also provided for registration of places considered of national significance on the (former) Register of the National Estate (RNE) or the Australian Heritage Places Inventory (AHPI).

The Australian Heritage Council manages the (former) RNE. This register was frozen in 2007, meaning no new items could be added to it. It remained a statutory register until February 2012 – it is now a non-statutory archive of heritage places. Sites and places entered on the NHL, the CHL and the (former) RNE are located on the AHPI.

State Legislation

Places of state heritage significance in Queensland are managed under the *Queensland Heritage Act 1992* (QH Act). The Act provides for the establishment of the Queensland Heritage Council (QHC) and the Queensland Heritage Register (QHR), which lists places of cultural heritage significance to Queensland, and regulates development of registered places. Under the provisions of the QH Act, any development of a place listed on the QHR must be carried out in accordance with the QH Act. A place may also be entered in the register if it satisfies one or more of the assessment criteria under Section 35 (1) of the QH Act (see Section 1.2.2, Significance Criteria). The QH Act also applies to potential archaeological places.

Local Legislation

Local heritage places are managed under local planning schemes and the *Sustainable Planning Act 2009*. The project area falls within the boundaries of Brisbane City Council. Local heritage places are managed under the *Brisbane City Plan 2014*.

1.3.2 Non-statutory Framework

There are other sources for heritage places or historic sites that are not listed on statutory registers. Places identified during these searches contribute to a better understanding of the project area and often identify places that require further investigation under the QH Act.

Queensland National Trust Register

The Queensland National Trust (QNT) is a membership-based community organisation that promotes natural, Indigenous and cultural heritage places and items of Queensland. The focus of the Trust's activities is heritage and environmental education. Through its properties, advocacy and research, the Trust encourages the community to understand and care for our significant places, wildlife, and stories. The Trust maintains the Queensland National Trust Register (QNTR) which was consulted for this report. The QNTR contains individual buildings, precincts, natural environment places and culturally significant artefacts. While these listings do not attract any legal protection for a place, nor do they put the owner of a listed place under any legal obligation, they do have moral and advocacy value (QNT 2004).

Monument Australia

The Monument Australia website is a historical and educational research site which records the public monuments and memorials in all Australian States and Territories under various themes. These public monuments and memorials were erected by a public desire to commemorate people or events.

1.3.3 Guidelines and Charters for Heritage Practice

The Burra Charter

The *Burra Charter* of Australia ICOMOS is the leading guideline for heritage practitioners and provides guidance for the conservation and management of significant places. It defines cultural significance as "aesthetic, historic, scientific or social value for past, present and future generations" and goes onto state "cultural significance is embodied in the *place* itself, its *fabric*, *setting*, *use*, *associations*, *meanings*, records, *related places* and *related objects*" (Australia ICOMOS 2013). It outlines a specific methodology/ process for assessing sites.

Queensland Heritage Council Guidelines

The Queensland Heritage Council provides guidelines to assist in assessing which level of cultural heritage significance is applicable to a site.

These guidelines provide the following definitions:

> *A place is of local cultural heritage significance if its heritage values are of a purely localised nature and do not contribute significantly to our understanding of the wider pattern and evolution of Queensland's history and heritage…*
>
> *A place is of state cultural heritage significance if its heritage values contribute to our understanding of the wider pattern and evolution of Queensland's history and heritage. This includes places that contribute significantly to our understanding of the regional pattern and development of Queensland (2006: 5).*

2 Existing Conditions

This section details the existing conditions of the project area, including a brief description of the project area, contextual historical background and results from the desktop assessment. This assists the understanding of the project area's historical phases. The results from this assessment inform the discussion in Section 3, Significance Assessment.

2.1 The Project Area

The project area is predominantly vegetated with casuarinas and areas of mangrove wetlands. The Kingsford Smith Memorial is not within the area proposed for development, but has been included in this assessment due to its proximity (within 100m of the project area).

Figure 2: Mangrove wetlands (Aurecon 2017).

Figure 3: Mangrove creek (Aurecon 2017).

Figure 4: Modified wetland on roadside (Aurecon 2017).

Figure 5: Kingsford Smith Memorial (Aurecon 2017).

The project area is located within the Brisbane Airport site. Since European settlement the site of Brisbane Airport was used largely for agricultural purposes and residential land until it was resumed by the Government in the early 1970s for use as an airport. Today, in addition to the airport itself, there are 420 businesses located at Brisbane Airport including freight and aircraft handling, warehouses, transport and communications, research, property and infrastructure development, education and training, recreation, tourism leisure and retail businesses (BAC 2015).

2.2 Heritage Searches

Searches of the various heritage register and databases for historic heritage near the project area were undertaken. Results are provided below.

Table 2: Register searches.

Places Identified	Heritage Registers	Comments
Eagle Farm Women's Prison and Factory Site	Queensland Heritage Register (ID 600186); Register of the National Estate (ID 16490); Commonwealth Heritage List (ID 105478); National Trust of Queensland Register (ID BNE 1/134).	Located 2km from project area.
Allison Testing Stands (former)	Queensland Heritage Register (ID 602329)	Located 2km from project area.
Second World War Hangar No. 7	Queensland Heritage Register (ID 601007); Register of the National Estate (ID 18174); Commonwealth Heritage List (ID 105407); National Trust of Queensland Register (ID BNE 1/805).	Located 2.5km from project area.
Brisbane Domestic Air Terminal (former)	National Trust of Queensland Register (ID BNE 1/916).	Demolished? Non-statutory register.
Australian Airlines Baggage Collection (former)	National Trust of Queensland Register (ID BNE 1/917).	Demolished? Non-statutory register.
Aircraft Hangar 2 (former)	National Trust of Queensland Register (ID BNE 1/918).	Demolished? Non-statutory register.
Aircraft Hangar 1 (former)	National Trust of Queensland Register (ID BNE 1/919).	Demolished? Non-statutory register.
Sir Charles Kingsford Smith Memorial	Monument Australia	Located just outside the boundary of the project area. Non-statutory register.
460 Squadron Memorial	Monument Australia	Located just outside the boundary of the project area. Non-statutory register.

2.3 Previous Reports

The following reports are relevant to historic heritage assessment of the study area.

Table 3: Previous Reports.

Report	Description
ARCHAEO 2007, New Parallel Runway Project, Brisbane Airport Corporation.	This study was undertaken for the New Parallel Runway Project and included an assessment of the site's Aboriginal and historic heritage significance including a detailed historical account. A range of sites were identified by the study including Aboriginal stone artefacts and historical remnants at Cribb Island.
Converge, 2014, Airport Environment Strategy 2014 – Cultural Heritage Chapter, Brisbane Airport Corporation.	Desktop study undertaken to assist BAC to implement strategies to identify, protect and conserve known and potential cultural heritage sites and places. The study included Aboriginal and historic cultural heritage places known to exist within the airport boundaries, including (Aboriginal sites) a burial, camp sites and possible Bora Ring; and (historic sites) jetty and plaques at Cribb Island, former school site and the Kingsford Smith Memorial.

Report	Description
Converge, 2015, Brisbane Airport Heritage Management Plan, Brisbane Airport Corporation.	The Heritage Management Plan (HMP) considers the Aboriginal cultural heritage (ACH) and historic heritage of Brisbane Airport excluding the New Parallel Runway project site. The HMP provides direction for future development to occur at Brisbane Airport whilst best conserving the site's heritage values. The HMP includes detailed information about the Aboriginal and historic heritage values of the airport site including an historical and biogeographical overview. Recommendations and management strategies are provided for the management of the site's significant cultural heritage values. The historical background from the HMP has been utilised for this assessment.
Leighton Contractors, 2008, Kingsford Smith Memorial – Brisbane. Artefact Condition Report.	The condition report was undertaken to ascertain the condition of the Southern Cross Airplane and associated artefacts prior to the NARP construction phases occurring. The results of the study determined that the plan and artefacts were in sound condition with no significant damage. It stated that increased dust deposition was highly likely, but could be monitored and managed and was considered unlikely to risk the site. A low-level risk of the plane toppling was identified so recommendations for monitoring were provided to manage this risk. The report provided a significance of the assessment and determined that much of the external fabric of the plane was not original and some was unsympathetic to the original design. It rated original fabric as nationally significant.
Leighton Contractors, 2009, Kingsford Smith Memorial – Brisbane. Post NARP Artefact Condition Report.	A second condition report was prepared following completion of NARP and found that the plane and associated artefacts had not deteriorated due to the project activities. The report provided comment that all mitigation measures and recommendations from the initial condition report were implemented during the project, including ongoing monitoring.

2.4 Historical Background

The following historical background is summarised from Section 2.4 of the HMP. Aboriginal history of the project area is not included in this assessment. Refer to Section 2.4.1 of the HMP for further details.

Convict era

- The Eagle Farm Agricultural Reserve was established near the current study area in in 1829. The farm was created to supply the fledgling Moreton Bay penal colony, which was established in 1824.
- The Eagle Farm Agricultural Reserve soon became the location of the main penal establishment for female convicts, who are recorded as being there since 1830. (This was located approximately 2.3km from the current project area).
- The farm, which was referred to as a 'female factory' contained a stockyard, separate compound for the female convicts, and a superintendent's compound. The female convicts were housed in a four-roomed building. The complex also included a two-roomed building for male convicts, a storeroom, matron's quarters, hospital and workhouse and a block of six cells (QHR ID 600186).

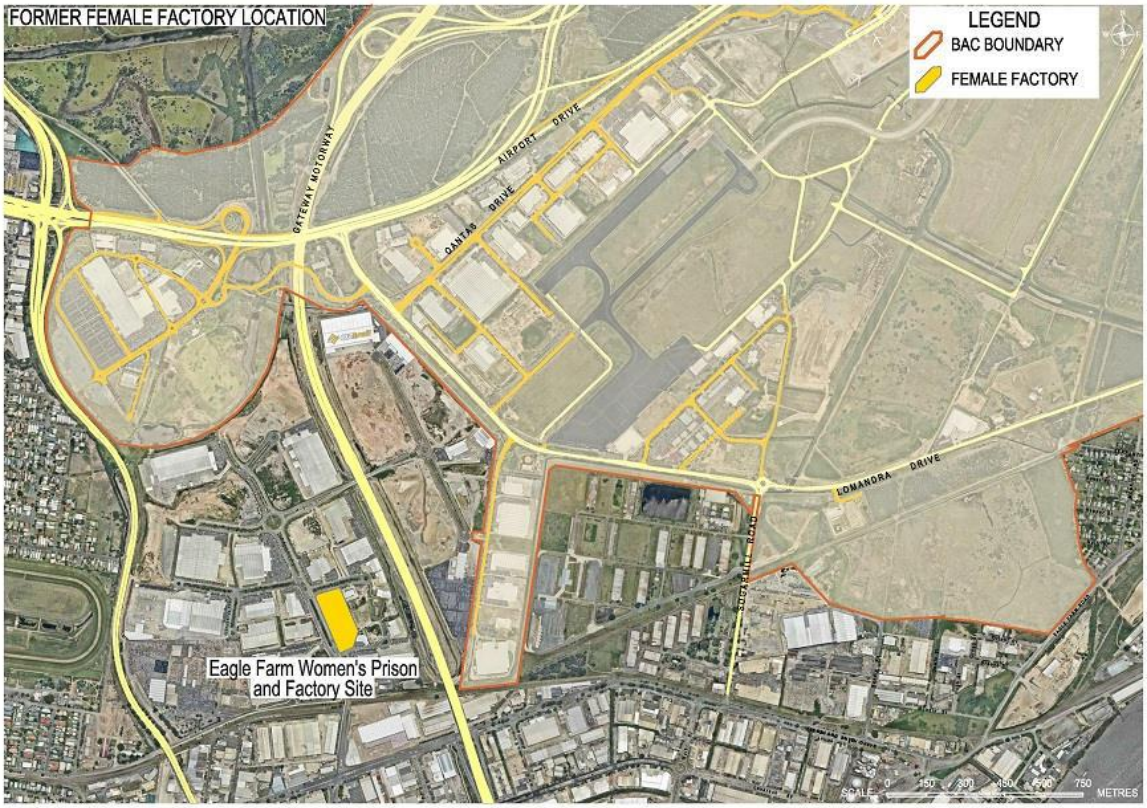

Figure 6: The location of the former women's prison in relation to the airport boundary (Converge 2016: 16).

Free Settlement

- Following free settlement in 1842, Eagle Farm was among the first places to be subdivided into lots for agriculture.
- The construction of the Brisbane to Sandgate railway line (opened May 1882) encouraged an influx of people to the north and along the railway route and the extension of the railway line to Pinkenba (1897) further stimulated industrial and agricultural growth in the area around Eagle Farm.

Early Aviation

- Some reports state that civil aviation activities had occurred at Eagle Farm racecourse in the current suburb of Ascot as early as 1912.
- On 29 June 1922, notification to acquire land at Eagle Farm for development of an aerodrome was given in the Commonwealth of Australia Gazette. The aerodrome began with several companies formed by military-trained pilots establishing themselves at Eagle Farm.
- The Eagle Farm Aerodrome witnessed the arrival of Charles Kingsford Smith and co-pilot Charles Ulm in the Southern Cross in June 1928.
- In September 1928, Kingsford Smith and Ulm made another record-breaking flight when they became the first to fly non-stop across the Tasman from Australia to New Zealand and back in the Southern Cross aircraft.
- Shortly before his death in 1935, Sir Charles Kingsford Smith donated the Southern Cross aircraft to the Commonwealth of Australia.
- A memorial was built to house the plane at Eagle Farm 30 years after his epic flight, in 1958. It was a glass and aluminium structure designed by architects Guy Crick Lewis & Williams and it was located opposite the old international terminal.
- The current memorial was built in the 1980s, and is located on Correa Street near the Airport Drive and Nancy Bird Way intersection.

Figure 7: Landing the 'Southern Cross' in 1928 (JOL ID# 139254).

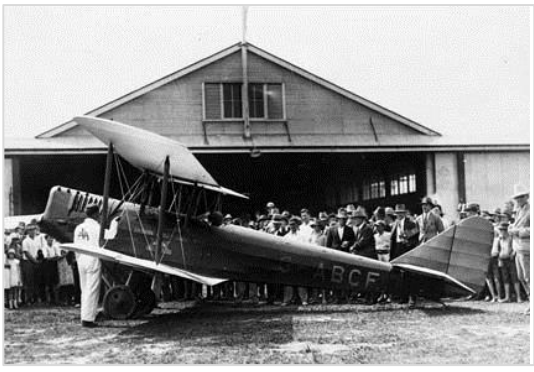

Figure 8: Charles Kingsford Smith at Eagle Farm (NAA ID# 11353043).

World War Two

- Eagle Farm was then used by the Royal Australian Air Force (RAAF) for training purposes until early 1942. With the advent of World War Two in the Pacific, the suburb of Eagle Farm became a hub of military activity.
- Several terminal buildings and facilities were built during this period.
- Remnant sites from World War Two still present in near the project area include Hangar No. 7 and the former Allison Testing Stands. Hangar No. 7 and the former Allison Testing Stands are now state heritage listed for their historic value. These sites are between 2 and 2.5km southwest of the current project area.

Figure 9: Eagle Farm during World War Two (JOL ID# 165563).

Figure 10: Military Camp at Eagle Farm Racecourse, 1944 (BCC Library ID# BCC-B120-80913A).

Post-World War Two Developments

- From the 1950s-1980s Brisbane Airport retained the igloos that were vestiges of its World War Two operations. Two terminal buildings housed the domestic carriers Ansett and Trans Australia Airlines, while a third catered for all international services. All three of these terminal buildings were wartime igloos erected to house military aircraft assembly and testing plants.
- The increasing number of both domestic and international passengers departing from Brisbane necessitated several investigations into the construction of a new airport in Brisbane from the early 1970s.
- A new site was chosen by state and local governments, 5 kilometres north of the former site, which necessitated the resumption of 60 houses in Lander's Pocket and Lower Nudgee, some land from the Nudgee Golf Course and virtually all the residential settlement at Cribb Island.

- A new International Terminal Building was approved for construction in April 1974, replacing a World War Two igloo.

Recent History of Brisbane Airport

- In 1988, Prime Minister Bob Hawke opened the runway and control tower for the new Domestic Terminal, in time for Expo '88. The new International Terminal was opened in 1995, and it was built with a modular design to allow for expansion.

2.5 Results of Desktop Assessment

Field wok was not undertaken by Converge during the current assessment, however, Converge have previously undertaken fieldwork at the airport site for the preparation of the HMP. Aurecon provided results/photographs of their fieldwork for Converge to review for the current assessment. Aurecon consultants did not identify any historic features or items of potential interest in the project area.

The desktop assessment found that there are no heritage listed items or sites within the project area, however, there are two historic heritage sites within the immediate vicinity - the Kingsford Smith Memorial and the 460 Squadron Memorial – which are both listed in a non-statutory register (Monument Australia).

Previous studies and the historical background of the project area identified the types of activities that historically occurred in the project area, including convict settlement, farming/agriculture, early aviation (including WWII) activities and the development of the airport. Although no historic sites have been identified in the project area, the desktop assessment has informed the following consideration of potential for historical sites/items to be identified within the project area during construction activities.

2.6 Further Potential within the Project Area

The potential for historic features to be extant within the project area is considered below. If any features of potential interest are located during construction works, the 'Procedure for Incidental Finds' should be enacted (Appendix A).

Convict era – highly unlikely to find convict era remnants in the current project area as the female prison/factory was located approximately 2.3 km to the south west.

Agricultural/farming – it is possible to find remnant agricultural/farming features in the project area such as former fences, footings of previous buildings, drains and culverts from former roads/tracks.

Early aviation – aside from the Kingsford Smith Memorial, which houses the Southern Cross plane, it is unlikely that other evidence of historic aviation will be identified in the current project area during construction as the former airport was in a different location to the southwest.

World War Two – aside from the Squadron 460 Memorial, which is located next to the Kingsford Smith memorial, it is unlikely that other evidence of WWII aviation (RAAF) will be identified in the current project area during construction as the former airport was in a different location to the southwest.

3 Significance Assessment

The methodology adopted to assess significance of the historic heritage of the project area and individual sites within the project area is set out in Section 1.2. This section assesses the historic heritage values and significance of the project area at many levels to establish a baseline for the project to manage those values. The first step in the assessment process is to assess the heritage values of the site and then individual sites are assessed.

3.1 Significance Assessment

This section sets out an assessment of the heritage significance of the project area and individual sites (where relevant) in accordance with the standard criteria identified in the *Queensland Heritage Act 1992* and Queensland Heritage Council Guidelines (refer to Section 1.4).

Table 4: Significance of the Project area.

Criteria	Grading	Statement
A. History.	Low (project area)	The project area has had various historical developments since the 1820s, when it was a penal settlement. Although sites of state significance, especially relating to its convict and wartime developments, are located nearby (within 2km), there are no historical sites within the footprint of the project that have been identified.
	Exceptional (KSM)	The Kingsford Smith Memorial (which houses the Southern Cross Plane) has historical significance and, although it is not listed on any statutory heritage registers, it is likely to threshold at state or national level for its historical significance.
B. Rarity.	Low (project area)	The project area does not demonstrate any known rare features of significance at local or state levels.
	Exceptional (KSM)	The Southern Cross Plane (at the KSM), is a rare example of a plane flown by Sir Charles Kingsford Smith, internationally renowned aviator. The Eagle Farm Aerodrome witnessed the arrival of Charles Kingsford Smith and co-pilot Charles Ulm in the Southern Cross in June 1928. Over 15,000 people waited at Eagle Farm to see Kingsford Smith complete this epic journey, as the first trans-pacific flight from the United States to Australia. Another plane flown by Kingsford Smith (Southern Cross Minor) is on display at the Queensland Museum.
C. Scientific/ archaeological.	Low (project area)	The project area has low potential to reveal any archaeological remnants or previously unknown historical features that would contribute to an understanding of the local area or state.
D. Representative.	Low (project area)	The project area does not demonstrate principal characteristics of a particular type of place that would be significant at the local or state levels.
E. Aesthetics.	Low (project area)	The project area does not feature aesthetic significance.
	Some (KSM)	The KSM has some aesthetic significance, including views and vistas to and from the memorial.

Criteria	Grading	Statement
F. Creativity/ technical.	Low (project area) Exceptional (KSM)	The project area does not feature a high degree of technical achievements or creativity from a particular period. The Southern Cross Plane (at the KSM) demonstrates exceptional technical achievements for having been flown by Sir Charles Kingsford Smith in June 1928, for the first trans-pacific flight from the United States to Australia.
G. Social.	Low (project area)	The project area does not demonstrate any special social or cultural associations.
H. Associative.	Some (project area) Exceptional (KSM)	The project area features a memorial for Squadron 460 which is significant at the local level for its association with RAAF personnel during WWII. The Southern Cross Plane (at the KSM) is significant for its association with Sir Charles Kingsford Smith, internationally renowned aviator.

3.2 Summary

The project site itself has little to no heritage value. It has potential to reveal items or sites (not currently known) during construction, but this can be managed with the procedure for incidental finds (Appendix A).

The Kingsford Smith Memorial (specially the Southern Cross Plane) is potentially significant at a national or state level for its historic significance, its rarity, aesthetics, technical achievements and associative values. It is not currently listed on any statutory heritage register.

The Squadron 460 Memorial has some local heritage value, but is not listed on any statutory heritage register.

4 Impact Assessment

4.1 Types of Potential Impacts

Potential impact on identified and potential historic heritage by the project will generally be vegetation clearance and removal of the ground surface and sub-surface disturbance related to the development of auto mall infrastructure. This report has considered the impact on identified and potential heritage values of all development activities relating to the development and operation of the auto mall.

4.2 Project Impacts on Identified Historic Heritage

Table 5: Potential impacts on identified heritage.

Place	Potential Impacts
KSM	Vibration and dust associated with the adjacent development is identified as a low risk, but a risk nonetheless which should be managed.
Squadron 460 Memorial	No potential impacts identified.

Previous projects have been undertaken near the KSM, including NARP, which did not result in any damage to the site as all recommendations and mitigations measures were followed (see Section 2.3). The recommendations/mitigation measures provided by the previous assessments have therefore been used to inform the recommendation/mitigation measures for this assessment (see Section 5).

4.3 Project Impact on Potential Historic Heritage

It is concluded that there is low potential for further historic places/items to exist within the project area. If extant within the project area, potential historic heritage sites are likely to relate to early agricultural activities such as blazed (survey) trees, remnant boundary fence lines, as well as historic drains and culverts relating to redevelopment as an airport. Recommendations and mitigation measures to manage project impact on unexpected finds are provided in Section 5.

5 Management Measures

This assessment has identified two NICH sites within the direct vicinity of the project area, of which, only one has potential to be impacted by the project's development – the KSM, although the impacts would be indirect and likely associated with either dust or vibration from the adjacent works.

It should be noted that potential sites of historic heritage significance may be extant within the project area – these could be subsurface (i.e. archaeological sites) or other currently unidentified sites. This section provides site specific recommendations in relation to identified and potential historic heritage sites, as well as general mitigation recommendations to manage potential impacts on unknown/unexpected historic heritage sites extant within the project area.

Assuming the management measures below are suitably implemented, this assessment concludes that the nature and level of impact on historic heritage by the project is manageable.

5.1 Management of the KSM

Undertake dust monitoring during all construction activities near the KSM. As per NARP, the building (KSM) is to be assessed and all door seals and building joints to be repaired/replaced as necessary prior to construction commencing, to ensure the building is weathertight. For reference, the previous measures were undertaken for NARP:

- In consultation with BAC, coordinate Heating Ventilation and Air Conditioning (HVAC) activity.
- HVAC personnel to monitor HVAC system efficiency to ensure minimum 50% contaminant removal (using ASHRAE Dust Spot Efficiency Test, or equivalent) throughout construction period.
- Install high-efficiency HVAC filters and pre-filters.
- Inspect, clean and/or replace HVAC filters as required throughout construction period (Leighton Contractors 2008).

Do not clean dust from historic artefacts or the plane without consultation, advice or supervision of a conservation expert.

5.1.1 Southern Cross Plane

Vibration and dust from the adjacent development may have indirect impacts on the Southern Cross Plane. To manage these potential risks the following should be undertaken.

- Undertake vibration monitoring during all vibration inducing construction works near the KSM. For reference the previous limits established were:
    - No vibrations exceeding 5 mm/s shall be produced at the KSM building base.
    - No vibrating machinery shall be used within proximity to the structure
    - No piles driven within 100m of the structure.
    - No preloading shall be placed near the building to cause settlement from the preloading deflection zone.
    - Limit all machinery operating within proximity of KSM to 15 kph and display advisory signage (Leighton Contractors 2008).

5.1.2 Moveable Heritage

- During NARP, the removable heritage items (such as the KS bust and plinth mounted chronometer) were removed from the KSM during the construction due to the risk of toppling from vibration. The engineer should provide advice as to whether this action is required for the current project based on estimated vibration. If required, the moveable heritage items

should be stored safely on BAC land until the completion of the project and then returned to the KSM.

5.2 Application of Historic Heritage Management Across the Project Area

The historic heritage management recommendations should be implemented and incorporated into the project's Environmental Management Plan (EMP) to mitigate project impacts on both identified historic heritage sites and unidentified historic heritage material/sites found during the development of the project.

This should be applied across the entire project area and should provide information and processes to enable identification and protection of historic heritage sites, both known and unknown. The policies and procedures for management of historic heritage sites or archaeological material uncovered during the project, as outlined in Appendix A (Incidental Finds Procedure), should be implemented.

Additionally, it is recommended that diligence be practiced during works conducted within the project area, particularly during any clearing or construction phases associated with initial preparation of the area. To facilitate this diligence, it is recommended that a historic heritage induction be developed once all approvals for the project are in place but prior to ground disturbing activities, which can be incorporated into the General Site Induction. The historic heritage induction should be prepared by a qualified heritage specialist and include the following:

- Specific instructions for crews regarding their obligations to look for and avoid impacting on historic heritage material until it has been properly assessed;
- Presentation of familiarisation material for work crews so that they are aware of what constitutes a historic heritage find;
- Provision of educational material to personnel informing them what archaeological material may look like, and provide clear instructions on what to do should any such material be found; and,
- A process for the collection, transport and storage of any historic heritage items.

5.3 Archaeologist On-Call

Whilst the potential is low due to the nature of the airport's construction, historic archaeological material may exist across the project area. It is recommended that a historical archaeologist be appointed 'on call' during construction phases of the project, so that a call-out can be made should unexpected archaeological material be located.

5.4 Unexpected Finds

The assessment has found that the project area has potential, albeit low, to contain unidentified historic heritage. Accordingly, the EMP developed for the project should include a procedure for managing unexpected cultural heritage material or sites that may be encountered. This should include:

- All work at the location of the potential historic heritage material/site must cease and reasonable efforts to secure the site should be made – a buffer zone of 20 metres around the find is suitable;
- Work can continue at 20 meters from a find area. Note that the material or site should not be removed or disturbed any further (barriers or temporary fences may be erected as a buffer around the find if required);

- The Site Manager should be notified. They will then notify the Archaeologist appointed 'on call' to the project; and
- The Archaeologist will provide management recommendations to the Site Manager and will liaise with EHP to ensure that the archaeological provisions of the *Queensland Heritage Act 1992* are followed.

A 'Procedure for Incidental Finds' is attached to Appendix A.

References Cited

ARCHAEO 2007, New Parallel Runway Project, Brisbane Airport Corporation.

Converge, 2014, Airport Environment Strategy 2014 – Cultural Heritage Chapter, Brisbane Airport Corporation.

Converge, 2015, Brisbane Airport Heritage Management Plan, Brisbane Airport Corporation.

Leighton Contractors, 2008, Kingsford Smith Memorial – Brisbane. Artefact Condition Report.

Leighton Contractors, 2009, Kingsford Smith Memorial – Brisbane. Post NARP Artefact Condition Report.

Appendix A – Procedure for Incidental Finds

Procedure for discovery of an historical item of potential cultural heritage significance

STOP WORK

If potential item/s of cultural heritage is located during works: stop work, mark and protect the site. Work can continue elsewhere if it will not affect the item.

↓

INITIAL CONTACT

Contact the Site Manager immediately and notify them of the item description and location.

↓

NOTIFICATION TO PROJECT ARCHAEOLOGIST

The Site Manager to contact the Project Archaeologist, including details of the nature of the item.

↓

ASSESS SIGNIFICANCE

The Archaeologist will attend the site as soon as possible to assess significance of item and recommend a course of action. These may include:

i) protect and avoid;
ii) excavate, record and remove;
iii) investigate and preserve, or
iv) no action if the item is deemed to have no significance.

Recommendation i), ii) and iii) will require preparation of a work method statement in consultation with EHP Cultural Heritage Branch prior to any action commencing.

IS ITEM DISCOVERED SIGNIFICANT?

Yes ↓

REPORT FIND TO EHP CULTURAL HERITAGE BRANCH

Reporting of archaeological find to EHP Cultural Heritage Branch is required by law. Depending on the nature of the find, the Project Archaeologist and EHP will negotiate requirements of find.

↓

COMPLETE RECORDING/FIELD WORK

Complete the archaeological or remedial works in accordance with the consent permit or agreed course of action. Advise Site Manager when assessment is complete.

↓

No ↓

RECORDING

Items deemed to have no significance will require recording as evidence. A photograph of the item, including a description of why it is not of significance, should be completed by the Project Archaeologist and forwarded to the Project Manager.

↓

ADVICE

Advise Site Manager when assessment is complete. Confirm advice with EHP Cultural Heritage Branch if required.

↓

WORK RECOMMENCES

Site Manager to advise when works can re-commence in the original or changed form. A Work Method Statement may be devised to ensure suitable management is in place by the project (if required).

↓

SUBMIT FINAL REPORT

Archaeologist completes reporting in accordance with the appropriate guidelines and conditions. A copy of the report to go to relevant Government Authorities and Project Manager.

(Converge 2017)

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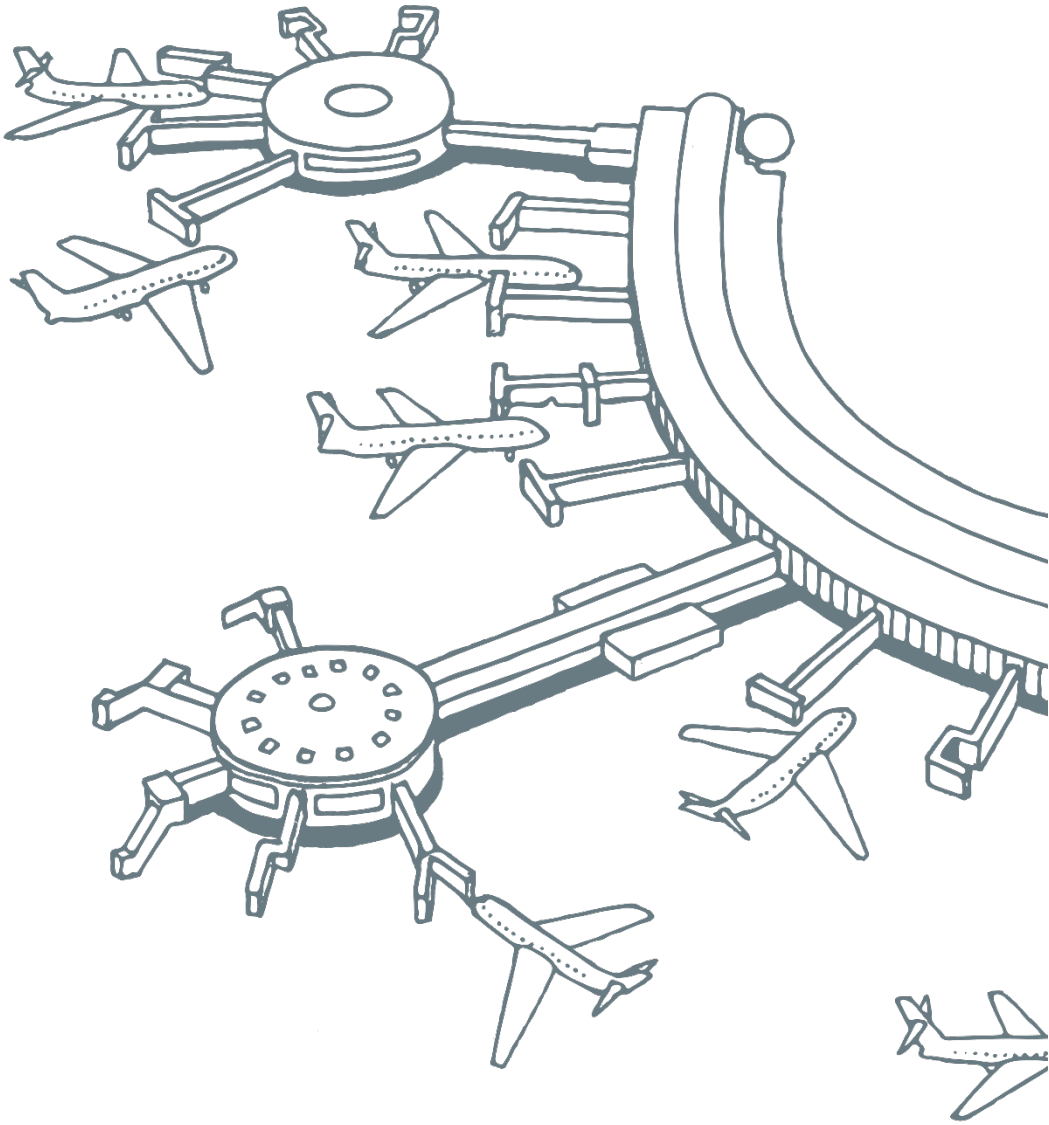
APPENDIX E
CONSTRUCTION TRAFFIC ASSESSMENT



BNE Auto Mall

Construction Traffic Impact Assessment

Brisbane Airport Corporation

Reference: 503043

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Bringing ideas to life

Document control record

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Glossary

Acronym	Meaning
AADT	Average Annual Daily Traffic
BAC	Brisbane Airport Corporation
GFA	Gross Floor Area
HV	Heavy Vehicle
LoS	Level of Service: An index of the operational performance of traffic on a given roadway, traffic lane, approach, intersection, route or network, 'A' meaning good performance, 'F' meaning poor performance
LV	Light Vehicle
STREAMS	An integrated intelligent transport system used in Queensland
TIA	Traffic Impact Assessment
TMR	Queensland Department of Transport and Main Roads
EAR	Environmental Assessment Report

1 Introduction

1.1 Project background

Aurecon has been commissioned by Brisbane Airport Corporation (BAC) to undertake a Traffic Impact Assessment (TIA) for the construction phase of the BNE Auto Mall (the Project) as part of the BAC's Major Development Plan (MDP) application.

The proposed development involves the construction of the BNE Auto Mall on an unused 51.3 ha parcel of land bordered by Moreton Drive, Airport Drive and Nancy Bird Way. The BNE Auto Mall is set to be Australia's benchmark automotive precinct designed for new and used car buyers, motoring enthusiasts and the public. The development will include a diverse mix of uses such as:

- A range of commercial uses including, but not limited to, automotive retail dealerships, retail showrooms, and retail tenancies
- Dedicated manufacturers brand experience centres
- An automotive performance track, associated manoeuvring and handling courses, skidpan and 4WD testing circuit
- Track operations and management centre

1.2 Objectives

The objectives of this TIA are to:

- Provide an overview of existing conditions
- Identify likely construction impacts
- Identify potential conflict points of the network that may emerge due to construction traffic
- Investigate potential cumulative network impacts with other Brisbane Airport planned improvements occurring during construction
- Investigate the level and nature of construction traffic impacts on the surrounding road network including Gateway Motorway, Moreton Drive, Airport Drive and Nancy Bird Way

1.3 Context

1.3.1 Staging of development

This TIA details potential construction traffic impacts due to the delivery of the BNE Auto Mall Project. Potential road impacts may result in each stage from transporting building materials, commuting vehicles for construction workers and moving heavy machinery.

The BNE Auto Mall is scheduled to officially open late 2021 following the completion of the roads and services for all stages, the completion of the performance track construction and some buildings that form part of Stages 1a and 1b. The stages for the Project are described in Table 1.

Table 1 Project stages

Stage	Description	Estimated timing
Site preparatory works	Endorsed under the EAR and include site clearing and partial grubbing, bulk earthworks, surcharging for roads, performance track and building areas, drainage works and acid sulfate soil treatment.	Underway Completion: late 2020

Stage	Description	Estimated timing
Stage 1a	Development of Lots 1 to 15 (initial dealerships and brand experience centres). Stage 1a will also include associated internal roads and services required for the Lots to operate. A permanent connection to the external road network off Nancy Bird Way will also be constructed.	Start: Early 2020 Completion: • Roads & services: late 2020 • Buildings: 2021/ 2022
Stage 1b	Performance track (including skid pan, kick plate, 4WD track etc) and track operation centre, including associated services required for the performance track to operate.	Start: Q2 2020 Completion: Mid-2021
Stage 2	Development of Lots 23 to 27 as grassed and fully serviced with appropriate infrastructure (stormwater etc) to allow for potential future development.	Start: Q2 2020 Completion: • Roads & services: Q2 2021
Stage 3	Development of Lots 16 to 20 (additional dealerships), including associated internal roads and services required for the Lots to operate. Roads and services for Stage 2 will connect with Stages 1a and 1b and provide a second permanent connection to the external road network off Airport Drive. Lots 21 and 22 will be developed during Stage 2 as grassed and fully serviced with appropriate infrastructure (stormwater etc) to allow for potential future development.	Start: Late 2020 Completion: • Roads & services: Q4 2021 • Dealership buildings: 2023

1.3.2 Existing road network

The Project site is enclosed by Moreton Drive, Airport Drive and Nancy Bird Way and located close to the International Terminal. The impacts on these roads due to the construction traffic will be discussed further.

Table 1.2 summarises the key characteristics of each of these roads.

Table 1.2 Road characteristics on surrounding roads

Road	Owner	Pavement condition	Approx. length (km)	Cross section	AADT (2017)	Adjacent land use	Posted speed (km/h)
Airport Drive[1]	BAC	Sealed asphalt	5.2	Four-lane, two-way road Divided by a solid median (width of the median is >10 m) With appropriate shoulders	15,000	Commercial and airport	70
Moreton Drive	BAC	Sealed asphalt	4	Varies along the road, however near the project site it is an eight-lane, two-way road Divided by a solid median (width of the median is approximately 10 m) With appropriate shoulders and barriers	60,000	Airport	90
Nancy Bird Way[2]	BAC	Sealed asphalt	0.5	Four-lane, two-way road Divided by a solid median (width of the median is approximately 2.5 m) Consist with appropriate shoulders	15,000	Airport	60

Table notes: [1]One inbound lane has been used since September 2017 for the site preparatory works and was separated from the through lane by concrete barriers and signage to delineate. There is a left-in, left-out entry and exit located on either side of the Energex Easement

[2]A site left turn only entry has been provided for the site preparatory works since September 2017

Airport Drive

Airport Drive is approximately 5.2 km in length and connects to the Airport Link toll road to the west. The road provides the main access route to the Brisbane Domestic and International Terminals. Airport Drive is a four-lane, two-way median divided road and controlled by BAC. Airport Drive is classified as a B-double route road to Southern Cross Way.

Moreton Drive

Moreton Drive travels west to east and is located to the north of the Project site. The road links to Airport Drive, west of the site. This is a BAC-controlled, four-lane, two-way median divided road. This road provides access to the Domestic Terminal and an alternative route to the International Terminal from the Gateway Motorway via Nancy Bird Way. This road is not classified as a multi-combination route.

Nancy Bird Way

Nancy Bird Way is an approximately 500 m road that travels north to south linking Moreton Drive and Airport Drive. The road is located to the east of the project location and is a four-lane, two-way road controlled by BAC. This road provides access to the Brisbane Airport Service centre as well as to the Airpark precinct.

1.4 References

The following reference documents informed Aurecon's technical review.

- Airport Drive West Precinct Traffic and Transport Study (WSP 2018)
- Road Design for Heavy Vehicles (Austroads 2015)
- Australian Standards
- Standards and Tolerances Guide (Queensland Building and Construction Commission 2016)
- Guideline to Traffic Impact Assessment (Department of Transport and Main Roads (DTMR) 2017)
- Maps: Multi-combination routes and zones in Queensland (DTMR 2017)

2 Project stages and construction routes

2.1 Site access

Site preparatory works for the BNE Auto Mall have been occurring since September 2017 and involve clearing, bulk earthworks and ground improvements. Current site access arrangements (as identified in Section 1.3.2) from Airport Drive and Nancy Bird Way will remain the likely access points to the Project site during construction of Stages 1 and 2.

During construction of Stages 1a and 1b, access to the Project site will continue to be obtained from Airport Drive (left-in, left-out) and Nancy Bird Way (left-in). A permanent connection to the site will also be made from Nancy Bird Way in late 2020, which will be a left-in, left-out and right turn in. The optimal truck entry point on Nancy Bird Way is located at the road's midpoint, which would provide approximately 200 m upstream and 200 m downstream length.

Construction traffic access during Stage 2 will predominately be through Airport Drive (left-in, left-out), south of the Energex Easement while during Stage 3, access will be through both the new intersections on Airport Drive and Nancy Bird Way and the construction access on Airport Drive, north of the Energex Easement. It should be noted that the intersection for the International P2 Multi-Level Car Park (MLCP) on Airport Drive will be signalised and is planned to be commissioned in mid to late 2020.

The detailed permanent concept layouts of the access arrangements for Airport Drive and Nancy Bird Way are provided in Figure 2.1 and Figure 2.2 respectively.

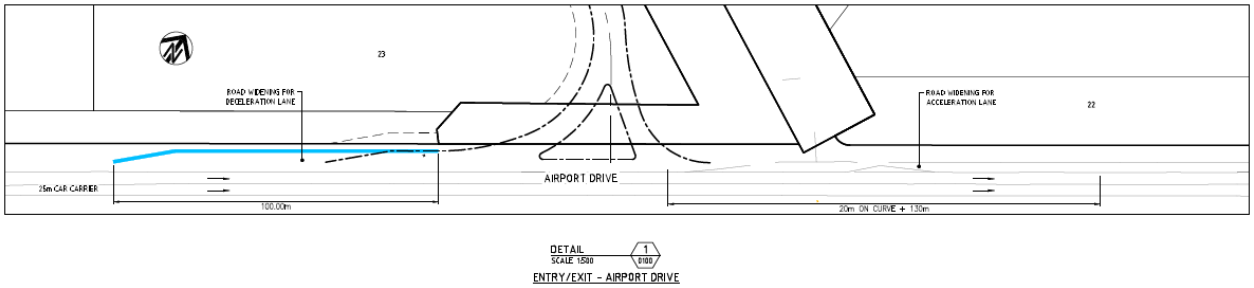


Figure 2.1 Access arrangements from Airport Drive

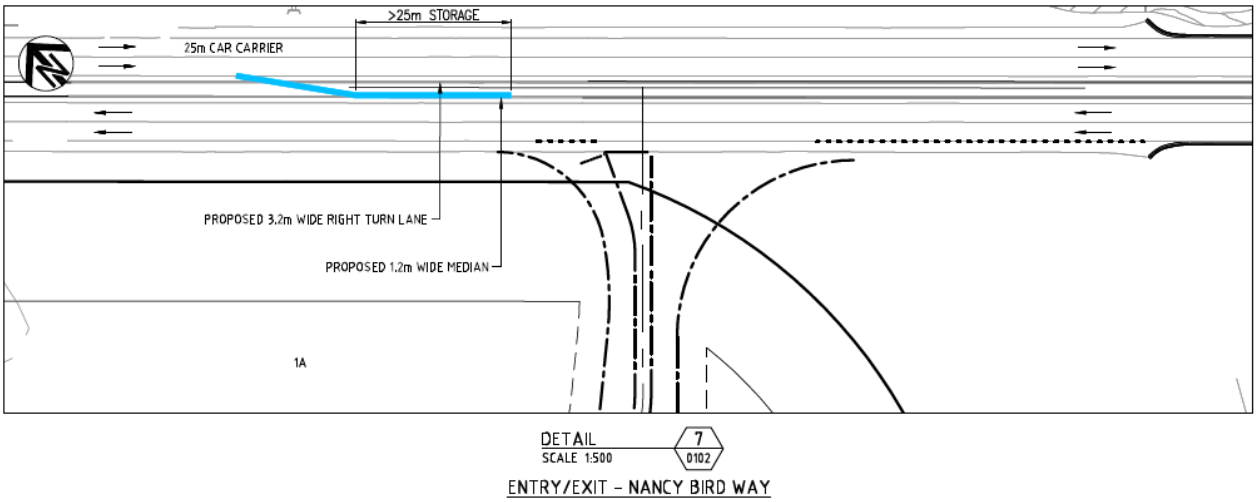


Figure 2.2 Access arrangements from Nancy Bird Way

2.2 Construction routes

Information on the haulage materials and associated storage locations has not been finalised. Therefore, assumptions were made to determine the likely construction routes, including:

- All construction-related trip generation is assumed to be from the north, west and south directions as the main airport operations are situated to the east of the Project site
- Construction traffic from the north and south would most likely be using the Gateway Motorway or Southern Cross Way as primary options

The assessment has been restricted to construction routes surrounding the Project site. For all proposed access points from Nancy Bird Way and Airport Drive, swept path analysis will be considered to ensure that the construction vehicles can move safely into and out of the site.

2.2.1 Construction routes via Airport Drive

Until a permanent access point on Nancy Bird Way is developed, construction traffic will travel along Airport Drive and will enter the BNE Auto mall via the dual left-in, left-out arrangements, as per the current traffic arrangements on site (See Figure 2.3).

During the construction of Stage 1 and Stage 2, construction vehicles will predominately access the site as per the proposed arrangements in Figure 2.3.

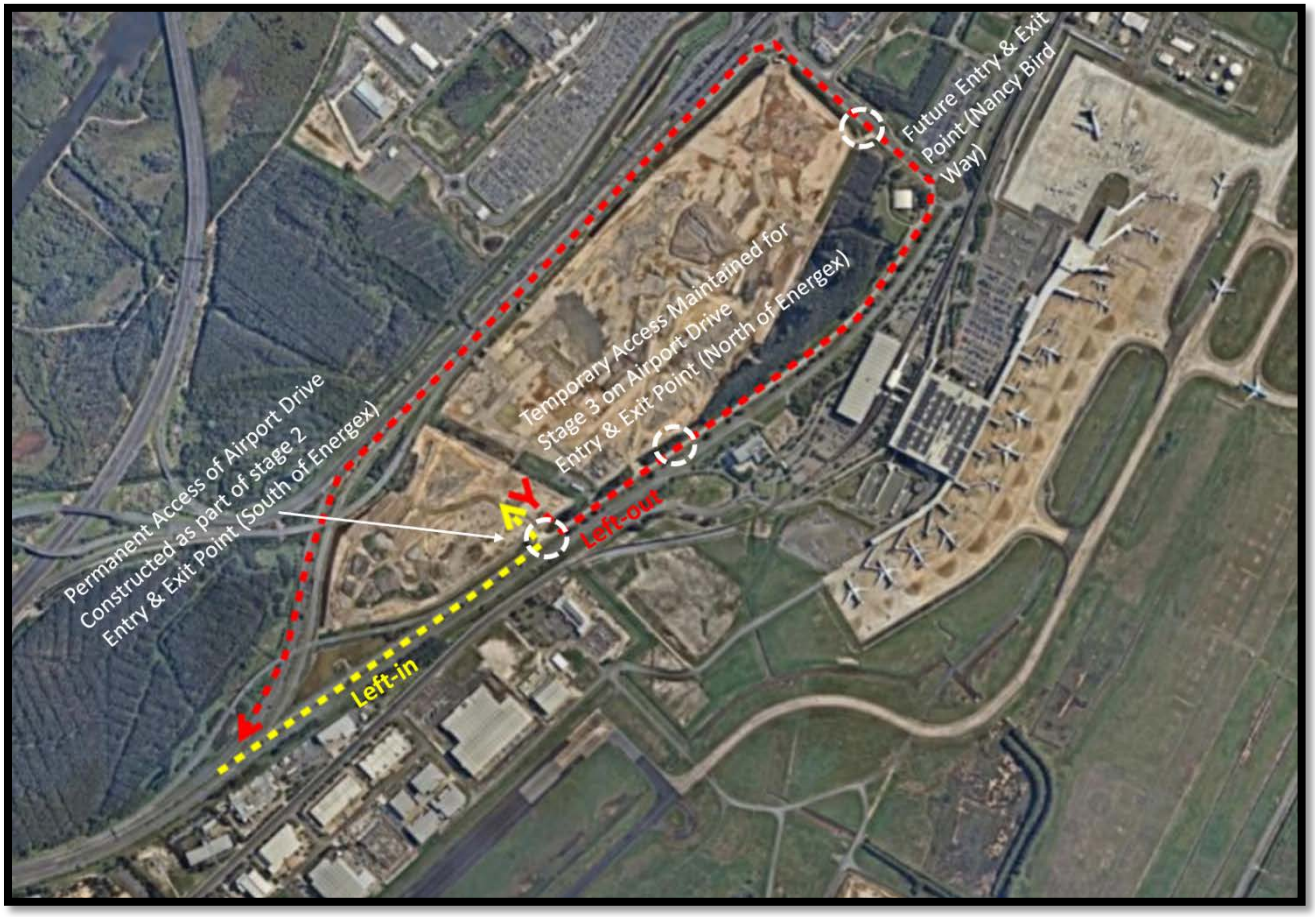


Figure 2.3 Construction routes from west accessing the site via temporary access points maintained from Earthworks

2.2.2 Construction routes via Nancy Bird Way

A new permanent intersection from Nancy Bird Way will be construction as part of the Stage 1A construction of roads and services in late 2020. Once complete, it will be used for access for the construction of buildings and the Stage 3 roads and services construction.

For construction vehicles originating from the north and south of the Brisbane Airport, vehicles would likely take the Gateway Motorway exit ramp onto Moreton Drive, and then continue approximately 1.2 km before approaching the roundabout and turning right onto Nancy Bird Way and then turn right into the Project site

(refer Figure 2.4) .To exit the site, vehicles are likely to turn left onto the Nancy Bird Way, then left onto Moreton Drive and take the entry ramps to enter the Gateway Motorway.

From the west, construction vehicles travelling along Airport Drive turn left at the roundabout onto Nancy Bird Way and continuing for approximately 200 m to turn left onto the Project site. To exit the site, vehicles are likely to turn left onto the Nancy Bird Way, then left onto Moreton Drive, which merges into Airport Drive. Figure 2.5 illustrates the proposed construction routes from the west accessing the site via Nancy Bird Way.

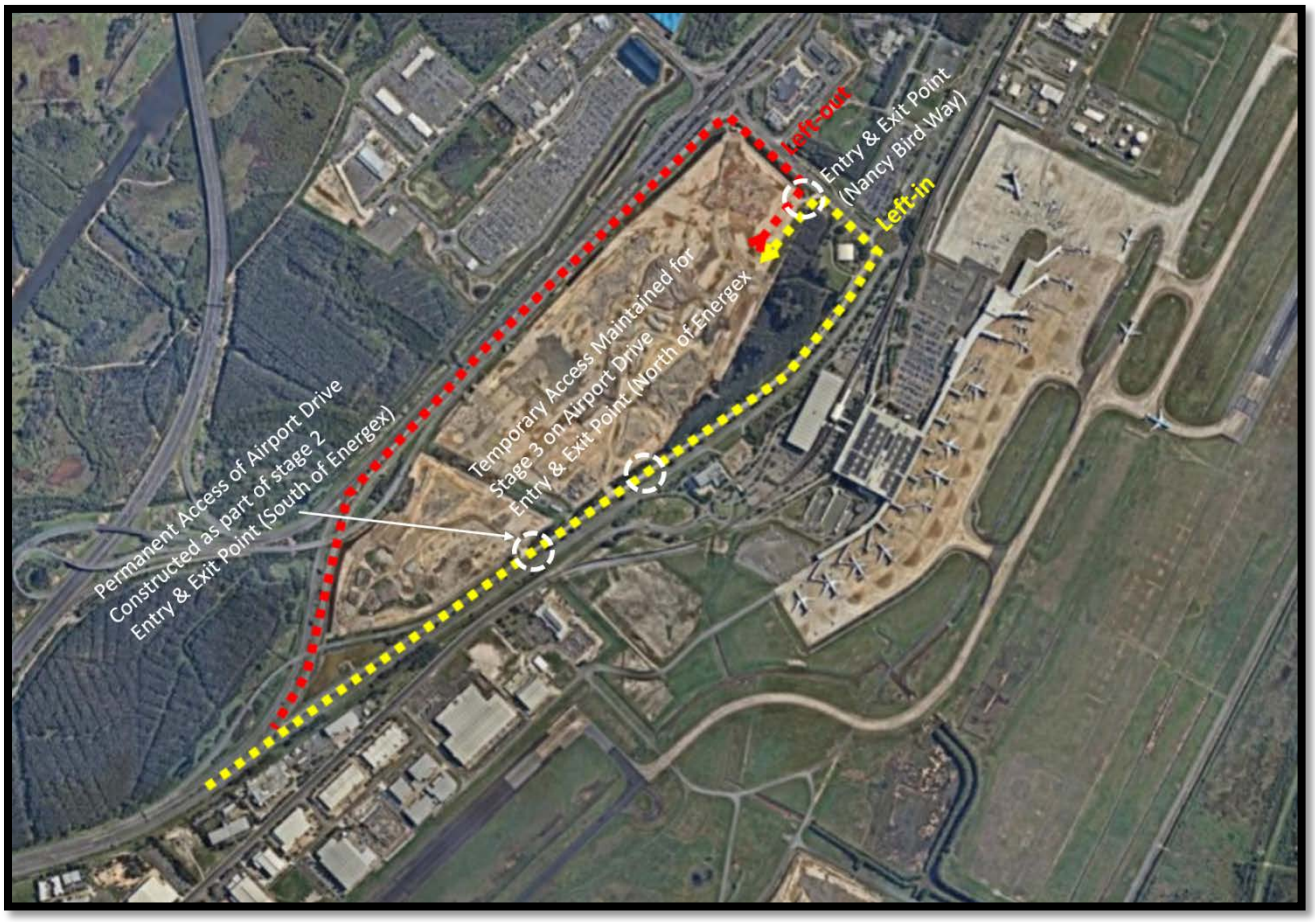


Figure 2.4 Construction routes from north and south accessing the site from Nancy Bird Way (left-in, left-out)

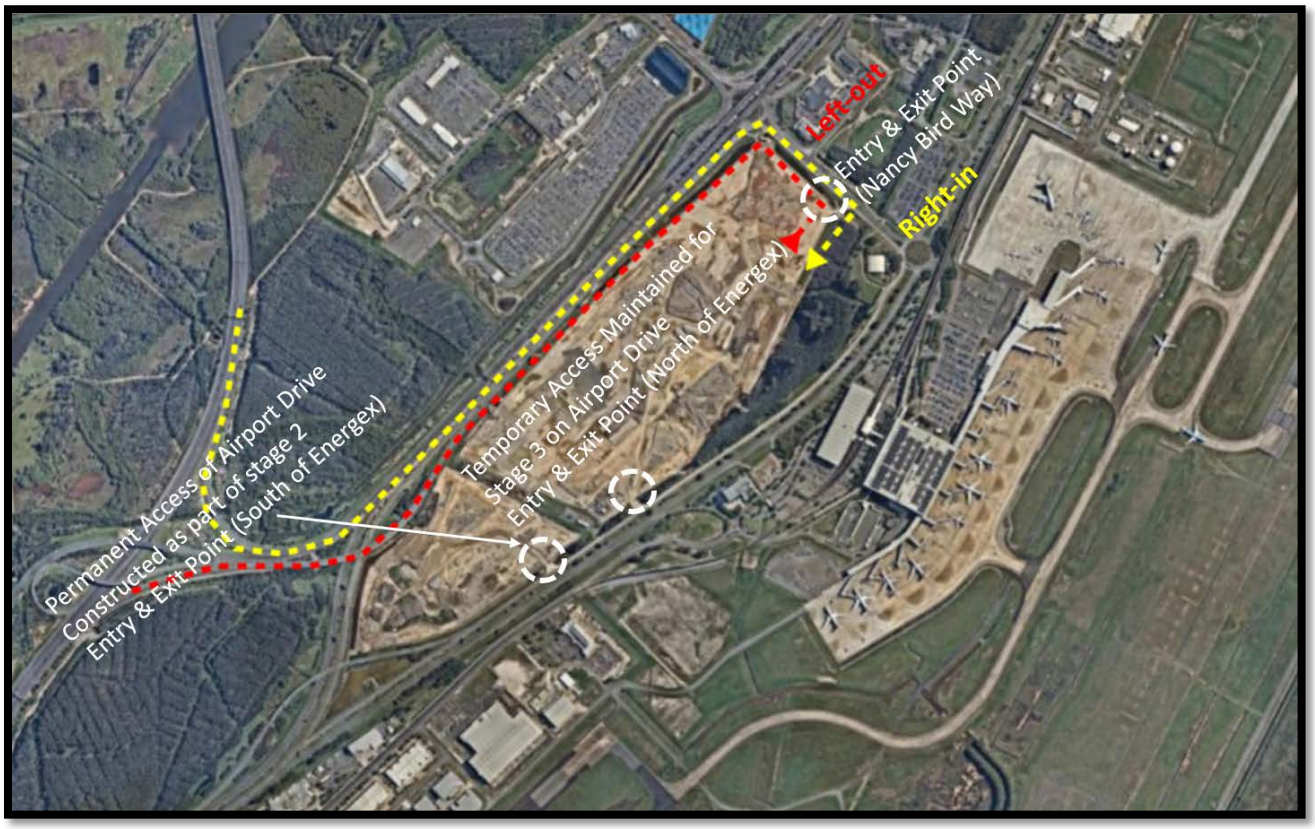


Figure 2.5 Construction routes from west accessing the site from Nancy Bird Way

3 Traffic generation

3.1 Methodology

The timeframe of BNE Auto Mall Project provides a preliminary construction programme across approximately four years. There are a variety of construction activities such as past and current fill haulage activities and transporting concrete, quarry materials, asphalt, building materials and machinery, as well as the daily commuting of the construction workforce. The quantity and the type of materials and equipment have not been provided; therefore, assumptions have been made based on similar commercial developments as well as current information on the land use, development staging, lot size, gross floor area (GFA) and forecast building heights. To establish a reference vehicle, concrete was identified as the major transport material. As such, for the purposes of this TIA, concrete materials transport has been assessed as the critical factor.

This methodology uses the approach outlined within DTMR's Guideline to Traffic Impact Assessment (2017), which recommends using similar developments and GFA as input parameters.

Likely haulage routes for construction vehicles include:

- Airport Drive
- Nancy Bird Way
- Moreton Drive

Table 3.1 details the impact rating for additional traffic generation and the associated need for adoption of mitigation measures or an upgrade of road capacity.

Table 3.1 Trip generation impact levels

Additional traffic generation	Impact rating	Determination
<5%	Negligible	Impact is negligible when the development traffic is less than 5% of the background traffic (DTMR 2017). There will not be a need for mitigation or upgrade.
5%-15%	Minor	Development traffic may have impact on roads/ intersection performance. There may be a need for mitigation or upgrade.
15%-40%	Significant	Development traffic will highly likely to increase delays on roads/intersections. Need for mitigation or upgrade will be likely.
40%-100%	Major	Development traffic equal to/exceed existing background traffic, therefore will have major impact on the roads/intersection performance. Need for mitigation or upgrade will be highly likely.

Internal movement of concrete and other building material within the site is assumed to be entirely contained within the Project site. It is assumed that vehicular access to the surrounding properties is not expected to be affected during the construction phase of BNE Auto Mall. There has also been negligible impacts during the site preparatory stage.

It should be noted that these initial inputs are assumptions only and have been provided for indicative impacts. Material sources and quantities are yet to be finalised, and as a consequence, alternative haulage routes may also need to be considered. In addition, the construction time frame, construction schedule and lot sizes may change, which may result in changes to any impacts.

3.2 Impact assessment

The following section provides the assessment of heavy and light vehicles likely to be generated during the construction phase of the Project:

- For concrete transportation:
  - The likely total concrete volume of 52,000 m^3 will be delivered to the Project site, predominately for the building works (calculation of the possible total concrete volume was according to the Queensland Building and Construction Commission Standards and Tolerances Guide (2016))
  - Concrete will likely to be transported using the most common cement mixer truck. The average concrete mixer truck payload is 6.1 m^3; this will be the reference vehicle.
  - Concrete mixer truck will operate 300 working days per year (six day working weeks minus all Queensland public holidays)
  - Daily concrete truck generation to the Project site would therefore equate to 7 (52,000 m^3 of concrete/6.1 m^3 truck payload/ 300 days of the year/ up to 4 years construction programme)
  - Accounting for both laden and unladen trips to and from BNE Auto Mall, the daily concrete truck movements would be double this amount at 14 movements per day (7 x 2 = 14 trips per day)
  - This number has been increased to 15 trips per day in total to be conservative
  - Truck loading operations will only occur during day time (daytime operation 0600 to 1800), six days a week
  - For AM and PM peak construction traffic, as approximately 15 return trips of concrete mixer truck would be evenly spread across a 12-hour working day, there would be an **additional 1 vehicles** due to peak hour concrete truck movements
- For other building material transportation (quarry materials, asphalt etc):
  - Truck and dog haul vehicles with a maximum capacity of 16 m^3 will likely be used to transport other building materials
  - The number of trucks required to transport other material is based on an indicative number of lots within the development area
  - One truck and dog haul vehicle is assumed to be used per lot per day and as such, 20 truck movements are likely to be generated from the Project site on a daily basis
  - Accounting for both laden and unladen trips to and from BNE Auto Mall, the daily truck movements would be double this amount at 40 movements per day (20 x 2 = 40 trips per day)
  - This number has been increased to 45 trips per day in total to be conservative
  - For AM and PM peak construction traffic, as approximately 45 return trips of truck and dog haul vehicles would be evenly spread across a 12-hour working day, there would be an **additional 4 vehicles** due to peak hour truck movements
- Potential overlap between current land development works and BNE Auto Mall construction:
  - Considering the “what-if” and “worst-case” scenarios, there is the chance that there could be a small window of overlap between the stage 1 construction works and Stage 3 of the land development works
  - This overlap will likely only occur for up to seven months for the completion of the site preparatory works
  - The Environmental Assessment Report (EAR) for the BNE Auto Mall estimated that, during the earthwork programme of Stage 3, there will be approximately 74 return trips of construction traffic across a 12-hour working day for removal of excess surcharge
  - For AM and PM peak construction traffic, an approximately 74 return truck trips across a 12-hour working day, there would be an **additional 6 vehicles** due to peak hour truck movements
- Traffic generation from construction workers:
  - The construction compound will likely be located within the Project site. An estimated 150 construction workers are estimated to be engaged in construction activities on any given day and staff members are expected to commute to and from the site during morning and evening peak periods from Monday

to Saturday. Employee traffic movements may occur outside of the commuter peak periods due to flexible working arrangements.

- The daily peak periods on the existing networks including Airport Drive and Nancy Bird Way are identified as follows:
  - AM Peak hour: 7:00 am to 9:00 am
  - PM Peak hour: 3:00 pm to 5:00 pm
  - Weekend Peak hour: 11:00 am to 12:00 pm
- For AM and PM peak construction traffic, there would be up to **an additional 150 light vehicle trips** per day per peak hour.

STREAMS data reports for 2017 for Nancy Bird Way, Airport Drive and Moreton Drive were provided by BAC. This data was analysed as part of the Transport Study, which has summarised the traffic volumes on these roads during AM peak period for an average weekday. The summary of the traffic data on the three roads is shown in Table 3.2. The construction trip distribution among Airport Drive, Moreton Drive and Nancy Bird Way assumed as 45%, 45% and 10% respectively.

Table 3.2 Likely trip generation during construction

Location	Peak hour volume (AM peak)	Trip distribution	AADT	Additional traffic volume on AM/PM peak[1]	Additional traffic generation	Traffic impact level
Moreton Drive (NB)	3,200	45%	60,000	39 (45% of 75 LV and 11 HV)	1.21%	Negligible
Moreton Drive (SB)	2,000				1.95%	Negligible
Airport Drive (NB)	500	45%	15,000	39 (45% of 75 LV and 11 HV)	7.8%	Minor
Airport Drive (SB)	1,000				3.9%	Negligible
Nancy Bird Way (EB)	850	10%	15,000	9 (10% of 75 LV and 11 HV)	1.1%	Negligible
Nancy Bird Way (WB)	300				3.0%	Negligible

Table notes: [1]HV = heavy vehicles; LV = light vehicles

Based on the above assumptions, during the construction phase of BNE Auto Mall, the expected construction traffic is anticipated to increase northbound traffic on Airport Drive (on AM/PM Peak) 7.8% and southbound traffic on Airport Drive (on AM/PM Peak) by 3.9%. The peak hourly volume of traffic on Moreton Drive will be increased by 2.0% or less in both the northbound and southbound direction. Given the 10% construction trip distribution rate on Nancy Bird Way, the peak hourly volume on Nancy Bird Way will be increased by 3.0% or less in both eastbound and westbound directions.

4 Traffic impacts on surrounding road network

4.1 Route analysis

4.1.1 Construction routes via Airport Drive

The existing dual left in / left out access arrangements from Airport Drive will be utilised for construction traffic. The road access (into the Auto Mall) utilises the left inbound lane cordoned off by concrete median barriers with acceleration and deceleration tapers either end. A minimum 1.0 m shoulder has been maintained alongside the barriers for the through lane.

4.1.2 Construction routes via Nancy Bird Way

The route assessment for Nancy Bird Way determined potential existing points of conflict at the site access point on Nancy Bird Way (refer Figure 2.4 and Figure 2.5). It should be noted that the temporary left turn lane entry will only be utilised during construction of roads and services until such time as the permanent intersection is constructed (late 2020).

For the permanent left-in arrangement (to be used by traffic travelling from Airport Drive onto Nancy Bird Way), a deceleration entry lane should be provided northbound on Nancy Bird Way, to separate the left turn traffic from through traffic, to reduce the delays. For right-in arrangements (to be used by traffic travelling from Moreton Drive onto Nancy Bird Way), an additional auxiliary right turn lane may need to be provided on Nancy Bird Way whilst a left turn out onto Nancy Bird Way will require an acceleration lane. The length of the additional lanes depends on the type of vehicle, the number of light and heavy vehicles and the sight distance requirement and will need to be determined.

In addition, during the detailed design process, potential weaving situations after exiting the roundabout at Moreton Drive need to be considered. Proper signage will need to be placed immediately after the Moreton Drive/Nancy Bird Way roundabout clearly indicating the turn right within 200 m. Detailed investigations of site access locations on Nancy Bird Way will be completed to identify the optimal layout arrangement.

4.2 Affected intersections

The potential Project construction routes travel through several intersections. However, this TIA only considers those intersections located close to the project as these intersections could most likely be directly impacted by the construction traffic. These intersections are discussed in detail in the following sections.

4.2.1 Lomandra Dr/Airport Drive intersection

This is a signalised “T” intersection with a short right turn and two left-turn lanes onto Airport Drive and two exit lanes. The length of the short right lane is approximately 26 m. Lomandra Drive is not assumed to be a construction route. However, if it becomes a construction route, certain attention should be given to the right turn lane from Lomandra Drive to Airport Drive as B-doubles could overhang the left turn lane causing a risk to other road users. Three fatal accidents occurred in 2006, 2009 and 2017 on Lomandra Drive.

4.2.2 Airport Drive/Nancy Bird Way roundabout

The existing roundabout has four legs, with two-lane approaches from north, south and west. The eastern leg of the roundabout provides access to the International Terminal carpark via Lobelia Circle and the western leg links with Moreton Drive via Nancy Bird Way. Construction traffic may heavily use this roundabout. The Transport Study (WSP 2018) noted that background traffic at this intersection is projected to reach its full capacity by 2033 and the redistribution of traffic associated with the International Terminal P2 carpark will only have minor implications to queuing and delays. However, it is noted that the intersection has previously been subject to delays and it is considered that the introduction of the additional heavy vehicles

due to the construction of the BNE Auto Mall could also have some minor impacts at certain times of day (eg peak hour) on the operation of the intersection.

Additional truck traffic associated with the site preparatory works has been using the road network since September 2017 with minimal impacts.

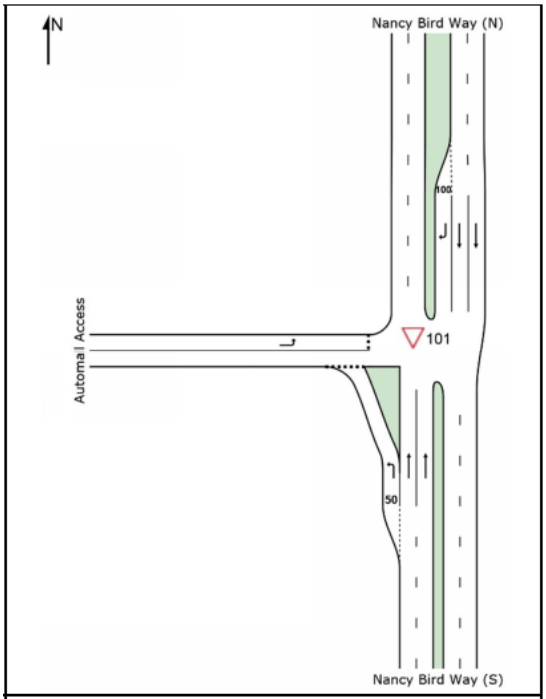
4.2.3 Moreton Drive/Nancy Bird Way roundabout

This is a four-leg roundabout with two-lane approaches from all directions. However, the exit lane at the north is restricted for the drivers coming from Moreton Drive and Nancy Bird Way. The Moreton Drive overpass is located over the roundabout providing access to the Airport. The main purpose of this intersection is to provide access to the Brisbane Airport Services Centre to the west and provide access to the carpark to the east. Moreton Drive is identified as a construction route and this roundabout will be impacted during the construction period of the project. However, given that negligible additional trips on Moreton Drive and Nancy Bird Way will be generated from construction works, it is considered unlikely for this roundabout to be significantly affected by construction activities.

4.2.4 Nancy Bird Way/Auto Mall access

The Transport Study (WSP 2018) has assessed the possible future layout of the nearby BNE Auto Mall intersection on Nancy Bird Way which provides an additional short right turn from Nancy Bird Way into the site. This layout was assessed for priority control intersection scenario with full pedestrian crossings on the northern and western legs of the intersection as illustrated in Figure 4.1. According to the SIDRA results, for the potential future signalised “T” intersection option, the critical movement is the northern through movement on Nancy Bird Way with a maximum back queue of 36.3 m in the AM peak in 2022. This queue is forecasted to increase up to 47.2 m and 81.5 m in 2026 and 2030 respectively. With additional construction traffic due to the BNE Auto Mall, the back queue on Nancy Bird Way may extend beyond the egress point by 2030, however this is well beyond the anticipated timeframes for construction of the BNE Auto Mall.

It should be noted that traffic patterns post commencement of the Auto Mall will be monitored by BAC to ensure intersection functionality remains as traffic growth occurs.



LEFT-IN, RIGHT-IN, LEFT-OUT (RILO)

Figure 4.1 Indicative intersection layout at the proposed entrance to the BNE Auto Mall from Nancy Bird Way

4.3 Crash analysis

The previous ten years' crash history of the surrounding road network was reviewed to determine if the Project would affect the existing crash risk. There were no fatal crashes recorded on the surrounding road network; however, several hospitalisations related to crashes were recorded, particularly on the Airport Drive and at the Airport Drive/Nancy Bird Way roundabout. No trend was apparent as the types of crashes varied. A significant reduction in crashes was noted in 2016 and 2017 which may have been due to improved safety conditions delivered by several road upgrades that took place in the area during the last two years. Queensland Globe excerpts of geospatial data for the hospitalisation and medical treatment crashes on surrounding road networks are provided in Figure 4.2.

Figure 4.2 Crash location history (Queensland Globe)

5 Other Brisbane Airport planned improvements

Aurecon has investigated potential cumulative network impacts with other Brisbane Airport planned improvements.

5.1 International Terminal Building – Multi-Level Car Park 2

The Multi-Level Car Park (MLCP) 2 for the International Terminal Building (ITB) is proposed on the opposite side of Airport Drive to the BNE Auto Mall and will provide secure, undercover parking to meet future parking demand associated with increasing ITB passenger movements.

To enable access to the ITB MLCP 2, a three-arm signalised traffic intersection is proposed on Airport Drive to provide access into the MLCP 2 as per Figure 5.1. This intersection provides right and left turn treatments and will incorporated pedestrian crossings into the design.

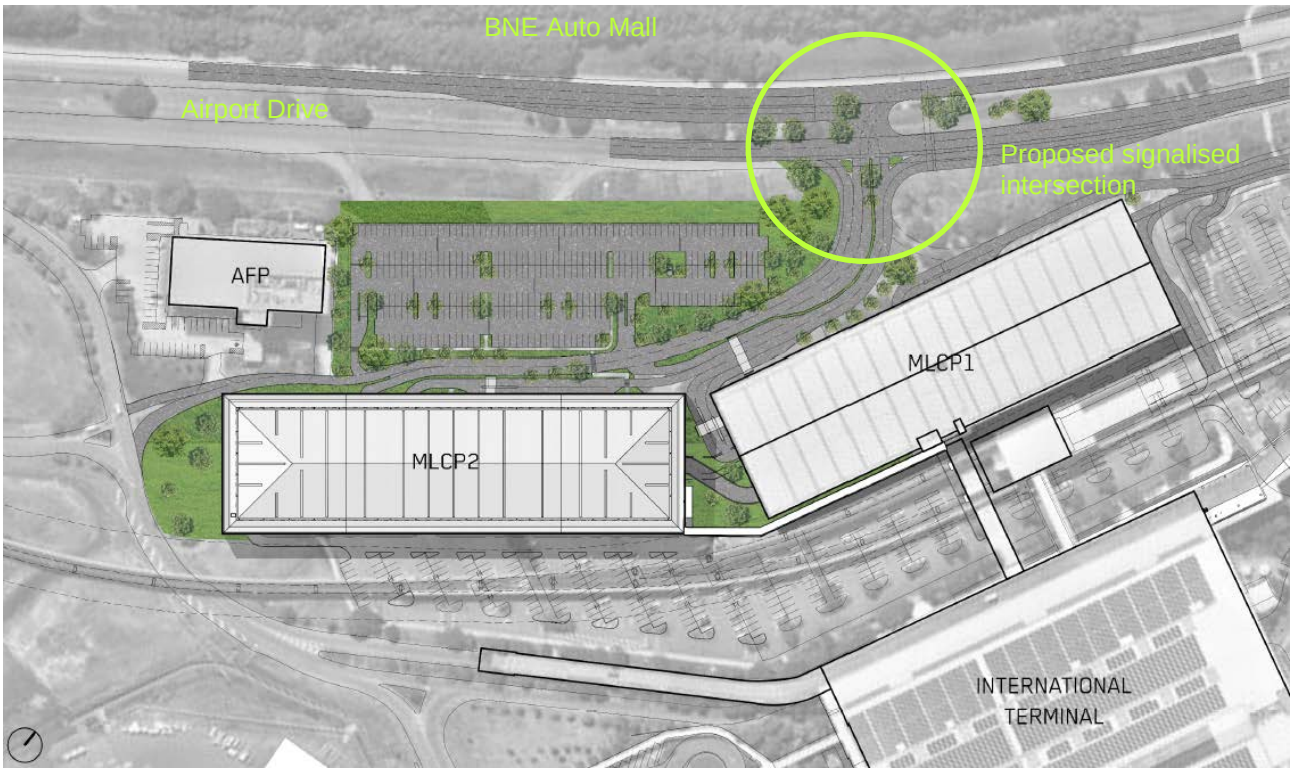


Figure 5.1 Proposed signalised intersection on Airport Drive (source: Laing O'Rourke 2019)

5.2 Proposed Skygate Airtrain Station

A new station is proposed on the Airport Rail Line to serve the Skygate precinct. The station would be most likely to located near the Novotel Hotel, which is approximate 4 km away from the BNE Auto Mall site. No information is available on this project component, including a schedule for delivery. This Project is less likely to generate traffic conflicts with the BNE Auto Mall construction traffic. Figure 5.2 illustrates the proposed location for the future station in relation to the BNE Auto Mall site.

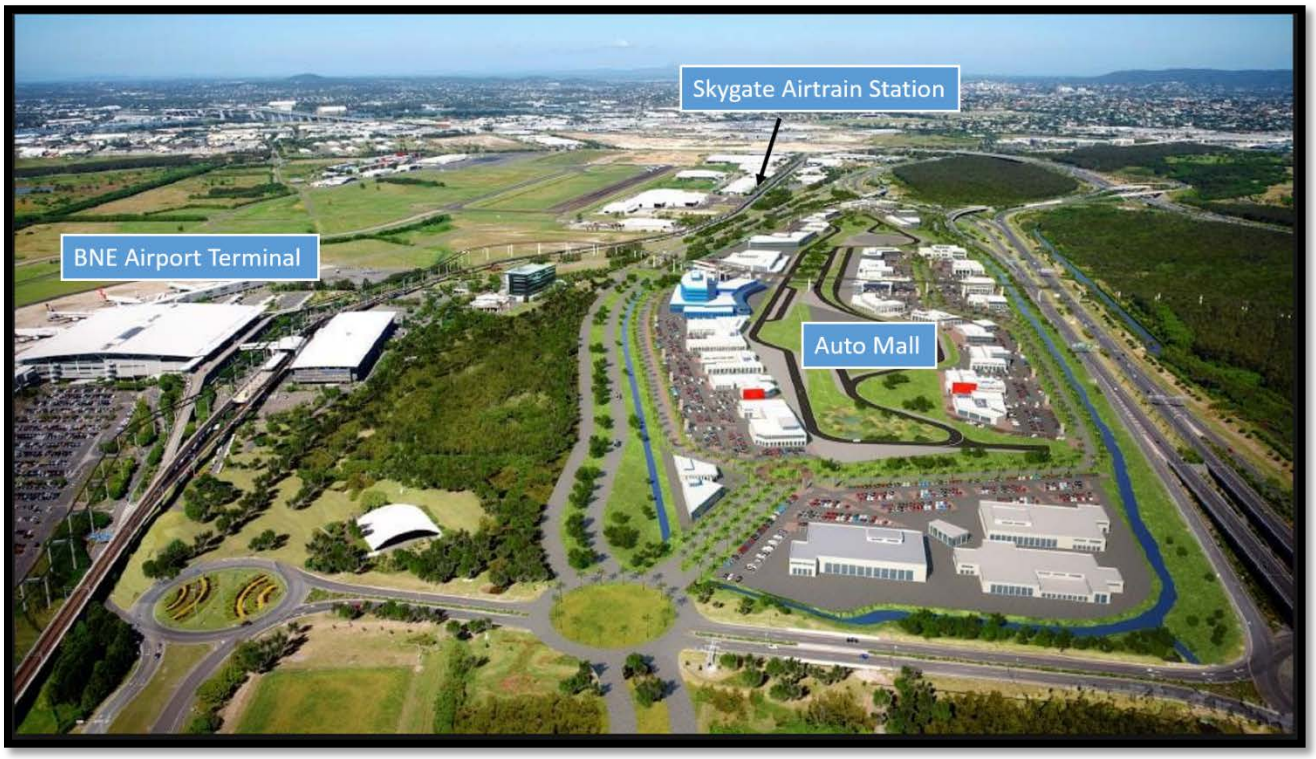


Figure 5.2 Location of proposed new station (excludes ITB MLCP2)

6 Summary and recommendations

A desktop analysis of the construction traffic impacts arising from the BNE Auto Mall Project has been undertaken and the findings and recommendations are summarised below.

- Construction impacts
  - The expected volume of additional construction vehicles could cause minor impact on the surrounding roads and the surrounding intersections. Existing traffic management measures will be continued to the next phase of the Auto Mall construction and implementation enhanced during the future construction phase, which will further assist in managing potential impacts on traffic and transport networks.
- Project route
  - The likely main construction routes will be Airport Drive, until intersection upgrades are complete and then both Moreton Drive and Nancy Bird Way will alleviate some of the pressure from Airport Drive
  - As the required construction materials may be delivered from a variety of places, some drivers may experience an unfamiliar road environment. Enhanced signage may be required immediately after the roundabout from Moreton Drive onto Nancy Bird Way, clearly indicating the Project access points.
- Affected intersections
  - The preliminary intersection analysis noted the Airport Drive/Nancy Bird Way roundabout as potentially the most affected intersection as it is projected to reach full capacity by 2033 and is occasionally subject to queuing and delays
- Access points
  - Existing access and egress points to the Project site on Nancy Bird Way and Airport Drive and will be utilised for the next stage of construction, as detailed in Section 2
  - Further investigations during detailed design should be completed for permanent site access locations on Nancy Bird Way and Airport Drive to identify the optimal layout arrangement, including swept path analysis to ensure that the likely mix of construction and operational vehicles can move safely into and out of the site
- Crash analysis
  - There were no fatal crashes recorded in the last ten years on the surrounding road network

During building construction and through stakeholder consultation, temporary construction, pedestrian, vehicle access and parking arrangements will be planned to minimise possible impacts on existing surrounding businesses. Other measures to reduce impacts from traffic generation during construction include:

- Each tenancy will be required to develop a Traffic Management Plan for construction works, which will be approved by BAC prior to development of that tenancy commencing. Construction haulage routes and traffic management requirements will be included in the Traffic Management Plan.
- Potentially staggering start and finish times for construction workers to avoid peak hour traffic
- Planning of preferred construction haulage routes and traffic management requirements in consultation with the future tenant and construction contractor

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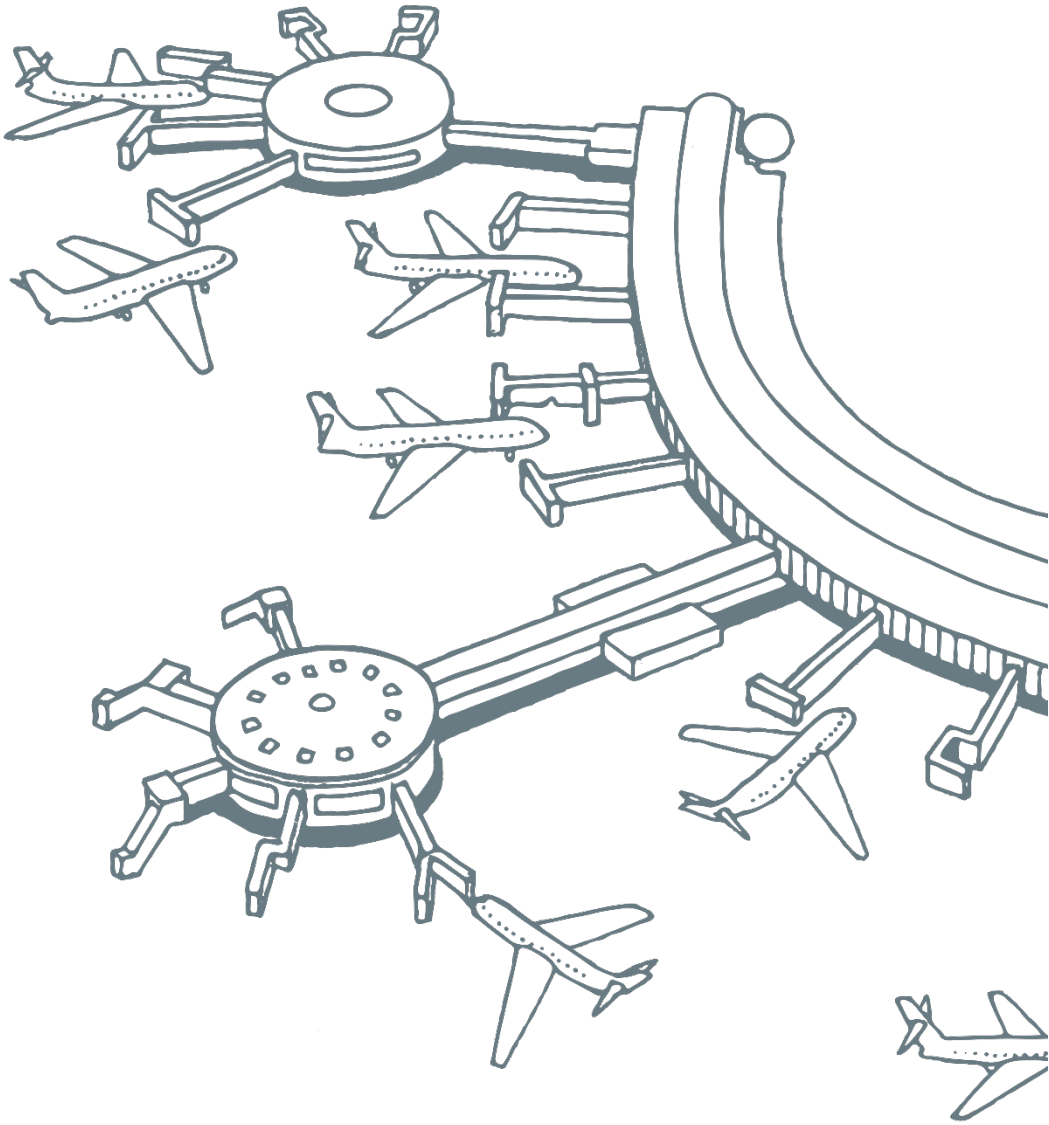
APPENDIX F
OPERATIONAL TRAFFIC – TECHNICAL MEMORANDUM



BNE Auto Mall

Operational Traffic Technical Memo

Brisbane Airport Corporation

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Glossary

Acronym	Meaning
AADT	Average Annual Daily Traffic
BAC	Brisbane Airport Corporation
GFA	Gross Floor Area
LoS	Level of Service: An index of the operational performance of traffic on a given roadway, traffic lane, approach, intersection, route or network, 'A' meaning good performance, 'F' meaning poor performance
LV	Light Vehicle
STREAMS	An integrated intelligent transport system used in Queensland
TIA	Traffic Impact Assessment
TMR	Queensland Department of Transport and Main Roads
EAR	Environmental Assessment Report

1 Introduction

1.1 Project background

Aurecon has been commissioned by Brisbane Airport Corporation (BAC) to prepare a technical memo for the BNE Auto Mall (the Project) operational traffic impacts as part of the BAC's Major Development Plan (MDP) application.

The BAC Auto Mall precinct is bordered by Moreton Drive, Airport Drive and Nancy Bird Way. The BAC Auto Mall is set to be Australia's benchmark automotive precinct designed for new and used car buyers, motoring enthusiasts and the public. The development will include a diverse mix of uses such as:

- A range of commercial uses including, but not limited to, automotive retail dealerships, retail showrooms, and retail tenancies.
- Dedicated manufacturers' brand experience centres.
- An automotive performance track, associated manoeuvring and handling courses, skidpan and 4WD testing circuit.
- Track operations and management centre.

1.2 Objectives

The objectives of this memo are to:

- Describe the operation of BAC Auto Mall's configuration with the current and future Brisbane Airport transport network.
- Examine the suitability of local access arrangements based upon local traffic modelling.
- Make recommendations in respect of parking provision.

1.3 Existing Transport Context

1.3.1 Staging of Development

The BAC Auto Mall is scheduled to officially open late 2021. The following table provides a snapshot of land use assumptions, expected timing of development and indicative lot area. The descriptions of land uses are as follows:

- Dealerships – generally contain a showroom, reception, visitor centre, administration area and café. The peak times of use are expected to be on the weekends.
- Brand Experience Centres – These are expected to provide a track car showroom, workshop and lobby on the ground floor and function rooms, lounge areas, office space and meeting rooms on the first and second floors.

Table 1 Land Use Assumptions

Indicative Lot	Indicative Lot Area (m^2)	Maximum Height (storeys)	Timing (Year)	Description
Stage 1				
1	24,000	3 storeys	2021	Dealership
2	12,000	3 storeys	2021	Dealership
3	7,000	3 storeys	2021	Dealership

Indicative Lot	Indicative Lot Area (m^2)	Maximum Height (storeys)	Timing (Year)	Description
4	6,000	3 storeys	2021	Dealership
5	5,000	3 storeys	2021	Dealership
6	6,000	3 storeys	2021	Dealership
7	6,000	3 storeys	2021	Brand Experience Centre
7A	5,000	3 storeys	2021	Brand Experience Centre
8	5,000	3 storeys	2021	Brand Experience Centre
9	5,000	3 storeys	2021	Brand Experience Centre
10	5,500	3 storeys	2021	Brand Experience Centre
11	5,000	3 storeys	2021	Dealership
12	8,000	3 storeys	2021	Dealership
13	8,000	3 storeys	2021	Dealership
14	7,000	3 storeys	2021	Dealership
15	11,000	3 storeys	2023	Dealership
Stage 2				
23	12,000	3 storeys	2026	Vacant lot
24	9,000	3 storeys	2026	Vacant lot
25	8,000	3 storeys	2026	Vacant lot
26	11,000	3 storeys	2026	Vacant lot
27	11,000	3 storeys	2026	Vacant lot
Stage 3				
16	8,000	3 storeys	2023	Dealership
17	6,000	3 storeys	2023	Dealership
18	6,000	3 storeys	2023	Dealership
19	6,000	3 storeys	2023	Dealership
20	7,000	3 storeys	2023	Dealership
21	20,000	3 storeys	2023	Vacant lot
22	19,000	3 storeys	2023	Vacant lot

1.3.2 Site Access

The Project site is enclosed by Moreton Drive, Airport Drive and Nancy Bird Way and located close to the International Terminal. A summary of traffic data received and used to support the traffic analysis in this report is shown below. Data included AM/PM peak directional volume and AWDT in all cases.

Table 2 summarises the key characteristics of each of these roads.

Table 2 Characteristics of surrounding roads

Road	Owner	Approx. length (km)	Cross section	AWDT (2017)	Peak Directional Volume (Hour)	Adjacent land use	Posted speed (km/h)
Airport Drive	BAC	5.2	Four-lane, two-way road Divided by a solid median (width of the median is >10 m) with appropriate shoulders	15,000[1]	500 Northbound 1,000 Southbound	Commercial and airport	70
Moreton Drive	BAC	4	Varies along the road, however near the project site it is an eight-lane, two-way road Divided by a solid median (width of the median is approximately 10 m) with appropriate shoulders and barriers	60,000[2]	3,200 Northbound 2,000 Southbound	Airport	90
Nancy Bird Way	BAC	0.5	Four-lane, two-way road Divided by a solid median (width of the median is approximately 2.5 m) with appropriate shoulders and barriers	15,000	850 Eastbound 300 Westbound	Airport	60

Table note: [1]Traffic volumes taken from Airport Drive, south of the intersection with Nancy Bird Way
[2]Traffic volumes taken from Moreton Drive, south of the intersection with Nancy Bird Way

Airport Drive

Airport Drive is approximately 5.2 km in length and connects to the Airport Link toll road to the west. It is a four-lane, two-way median divided road and controlled by BAC that road provides the primary access route to the Brisbane Airport, along with Moreton Drive.

BNE Auto Mall site access is currently obtained from Airport Drive as a left-in, left-out arrangement and this will be formalised for Stage 2 of the Auto Mall development. The nearby intersection for the International P2 Multi-Level Car Park (MLCP) on Airport Drive will be signalised and is planned to be commissioned in mid to late-2020.

The existing dual left in / left out access arrangements from Airport Drive will be utilised for construction traffic. The road access (into the Auto Mall) utilises the left inbound lane cordoned off by concrete median barriers with acceleration and deceleration tapers either end. A minimum 1.0 m shoulder has been maintained alongside the barriers for the through lane.

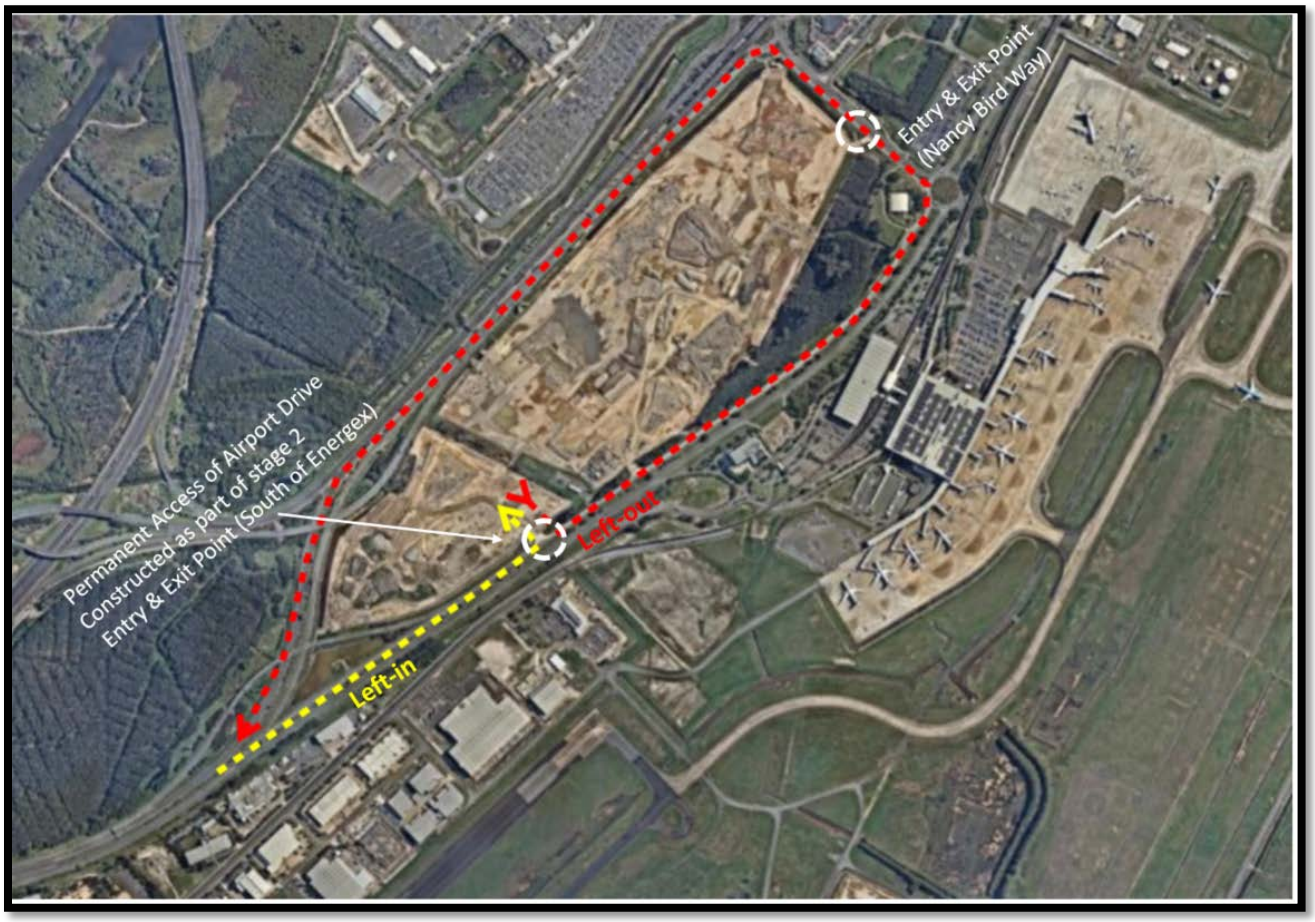


Figure 1 Traffic from the west accessing the site from Airport Drive

Moreton Drive

Moreton Drive travels west to east and is located to the north of the Project site. The road links to Airport Drive, west of the site and is the primary connection between the Gateway Motorway and Brisbane Airport. This is a BAC-controlled, four-lane, two-way median divided road. This road provides the main access to the Domestic Terminal and an alternative route to the International Terminal from the Gateway Motorway via Nancy Bird Way.

Nancy Bird Way

Nancy Bird Way is an approximately 500 m road that travels north to south linking Moreton Drive and Airport Drive. The road is located to the east of the project location and is a four-lane, two-way road controlled by BAC. This road provides access to the BNE Service Centre as well as to the Airpark precinct (the Central Parking Area offers budget, longer term parking as well as staff and valet overflow parking).

A permanent connection to the site will also be made from Nancy Bird Way in late 2020, which will be a left-in, left-out and right turn in, and will be operational from Stage 1. The optimal vehicles entry point on Nancy Bird Way is located at the road's midpoint, which would provide approximately 200 m upstream and 200 m downstream length.

Figure 2 **Traffic access the site via Nancy Bird Way entry and exit point**

1.3.3 Public Transport

Currently, there are no public bus services that serve the project site, but the closest public bus is route 590, which serves the Skygate precinct. Brisbane Airport operates complementary bus services between the nearby Centralised Parking Area (AIRPARK) and the Terminals, 24 hours a day, 7 days a week). The nearest railway station is the Airtrain Station at the International Terminal, which is located approximately 800 m east of the site. The Station is on the Airport line, connecting Brisbane International Airport with the Brisbane CBD. The service operates every 15 minutes in peak hours and every 30 minutes during the off peak. The rail and bus services that operate in the area are shown in Figure 3 with the project site represented as a green star.

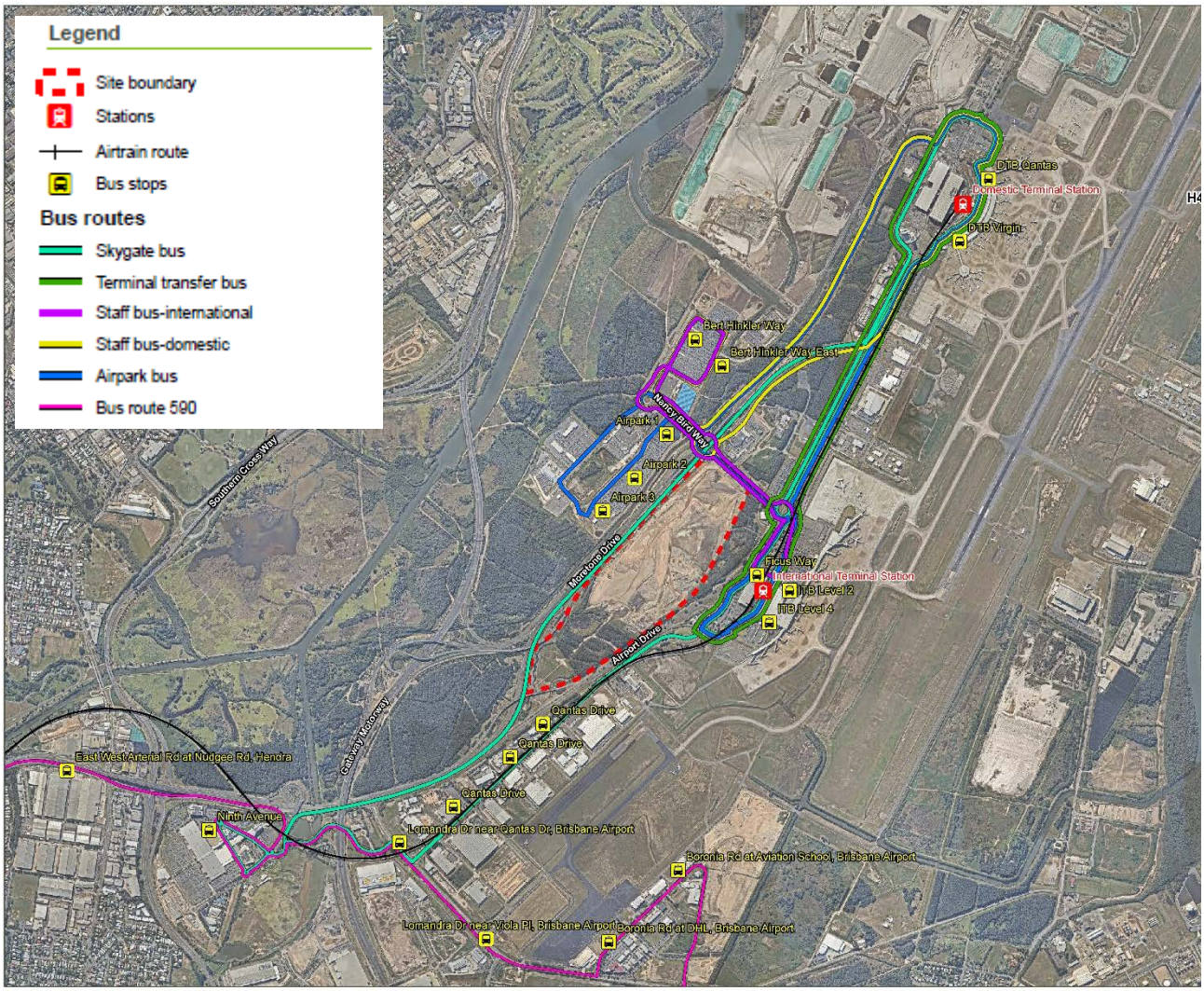


Figure 3 **Public transport routes through Brisbane Airport**

1.3.4 Walking and Cycling

Walking and cycling access to Brisbane Airport is provided by the Kedron Brook bikeway.

A dedicated pedestrian and cyclist pathway connects from Kedron Brook into Brisbane Airport's Skygate precinct with further on and off-road connections provided on Lakeside Drive, Qantas Drive and Airport Drive.

There is currently a one-way outbound cycle route on Airport Drive and cycling is prohibited on Moreton Drive.

The existing cycling access surrounding the project area is illustrated in Figure 4 with the project site represented as a green star.

The nearest shared pathways are provided from the International Terminal Building to the Kingsford Smith Memorial and around BNE Service Centre and Banksia carpark on Nancy Bird Way and Airport Drive.

Further expansion of the pedestrian and cycling infrastructure is likely to be required to enable safe, functional access to the BAC Auto Mall. This will include:

- Proposed off-road pathways connecting into Skygate North, Moreton Drive West and CPA precincts
- Proposed connections to the existing on-road cycle network along Airport Drive and Qantas Drive

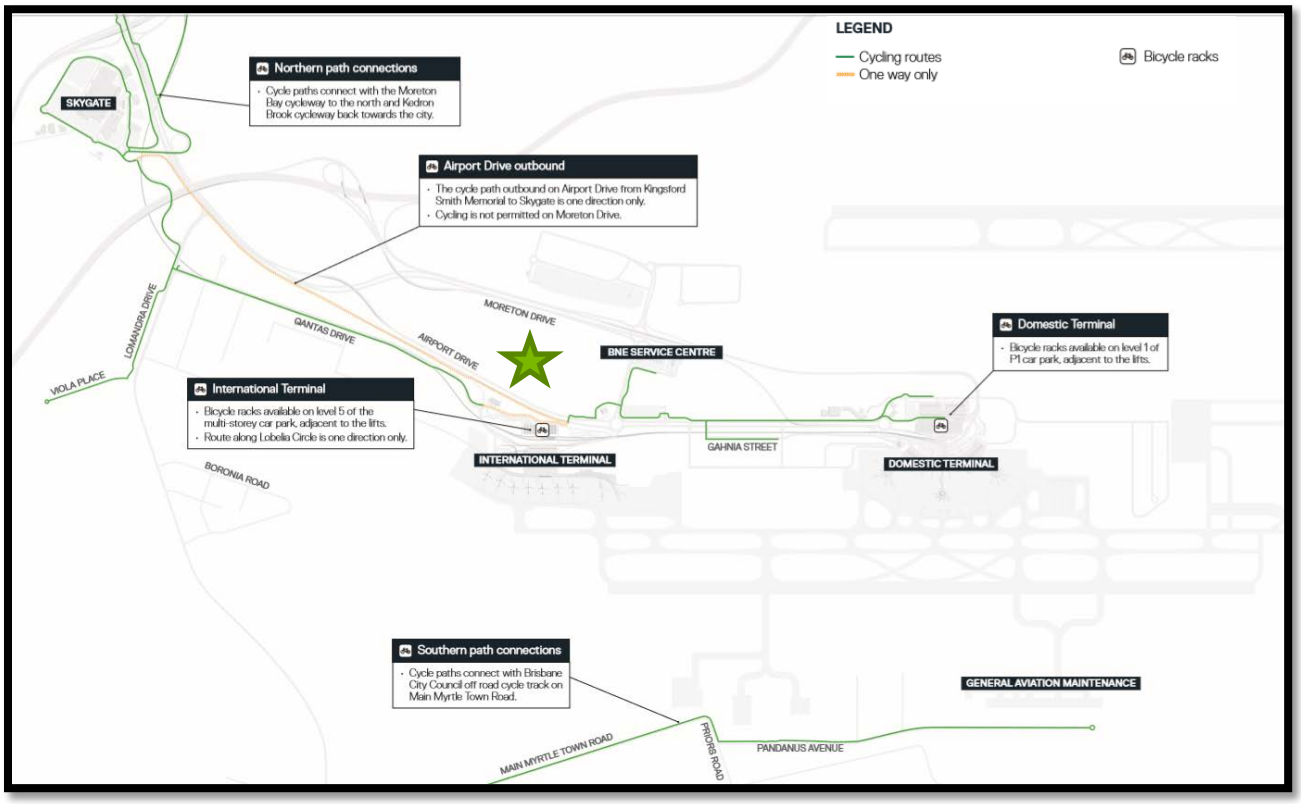


Figure 4 Brisbane Airport Existing Cycling Infrastructure

1.3.5 Crash analysis

The previous ten years' crash history of the surrounding road network was reviewed to determine if the Project would affect the existing crash risk. There were no fatal crashes recorded on the surrounding road network; however, several hospitalisations related to crashes were recorded, particularly on Airport Drive and at the Airport Drive/Nancy Bird Way roundabout (refer Figure 5). No trend was apparent as the types of crashes varied.

Queensland Globe excerpts of geospatial data for the hospitalisation crashes on the surrounding road networks are provided in Figure 5.

Figure 5 Crash Location History (Source: Queensland Globe)

1.4 References

The following reference documents informed Aurecon's technical review.

- Airport Drive West Precinct Traffic and Transport Study (WSP, 2018)
- Road Design for Heavy Vehicles (Austroads, 2015)
- Principle Cycle Network Plans (TMR, 2016)
- Standards and Tolerances Guide (Queensland Building and Construction Commission, 2016)
- Guideline to Traffic Impact Assessment (TMR, 2017)

2 Trip Generation and Mode Share

2.1 Traffic Generation

Based on the trips rates sourced from TMR, New South Wales Roads and Maritime Service (RMS) and the Institute of Transportation Engineers (ITE) (version 9) for "car dealerships", the daily trip generation rate of 5.83 per 100 m^2 has been adopted for this assessment. The following table summarises the estimated traffic generation for each of the development stage including peak hours trip generation.

Table 3 Trip Generation (total vehicles)

STAGE	AM Peak (8AM-9PM)	PM Peak (4PM-5PM)	Daily	Daily Trips/100m^2 GFA	Weekend (11AM-12PM)
Stage 1	308	323	3,027	5.83	210
Stage 2	404	424	3,963	5.83	270
Stage 3	82	86	809	5.83	50
Total	**794**	**833**	**7,799**	**N.A**	**530**

2.2 Trip Generation Summary

Based on the above trip generation analysis, the total number of car trips expected to be generated by the proposed site is approximately 7,799, including sales staff, servicing staff, sales visitors, car servicing visitors and other operational activities. It is worth noting that staff members are also likely to arrive before visitors start coming and leave after visitors have departed. Thus, these trips are unlikely to add to the peak hour trips. Existing BAC airport shuttles (the complimentary bus services described above) may also be considered for employee transport, which could reduce the trip generation to the site.

2.3 Assessment Factor

The trip generation assessment has adopted the following factors:

- Self-containment factor of 30% for retail dealerships, servicing areas and brand experience centres (i.e. visitor trips between different dealerships).
- External linked trip factor of 30% for all retail dealerships, servicing areas and brand experience centres.

These factors are based on the industry guidelines published by ITE, TMR and RMS and have been adjusted to suit the unique nature of the Airport precinct.

2.4 Mode Share

As per the Ground Transport Plan (2014), the following modes of transport are currently used by employees and visitors to access the Airport precincts (other than the terminals):

- Private vehicle (73%)
- Commercial vehicle (18%)
- Public transport (9%)
- <1% by active transport

This mode split is represented in the graph below.

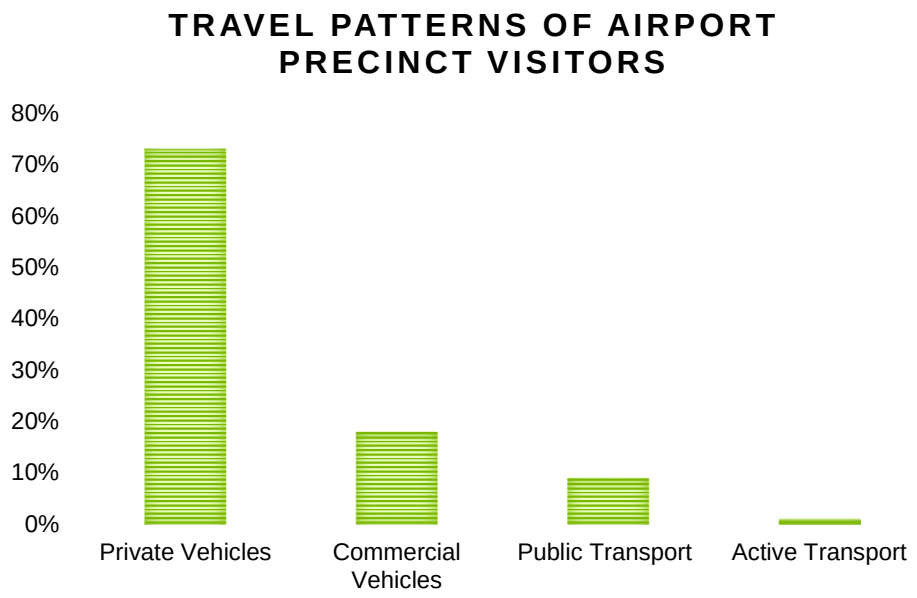


Figure 6 Visitors' Mode of Travel to/from Brisbane Airport Precinct

While development of the Auto Mall will potentially provide an uplift in public transport and active transport modes, the ongoing car-based nature of the precinct suggests that the above split in modes of transport can be adopted for this operational traffic assessment with respect to mode share.

Using the findings of Table 3 and applying it to the estimated 7,799 people who will visit BNE Auto Mall, detailed traffic generation is shown in Table 4 below.

Table 4 Detailed Traffic Generation

Mode	Mode %	Person Trips
Private Vehicle	73%	5,693
Commercial Vehicle	18%	1,404
Public Transport	9%	702
Active Transport and Multimodal Transport	<1%	<70
Total	**100%**	**7,799**

Therefore, a total of 5,693 private vehicle trips and 1,404 commercial vehicle trips are expected to be generated by private vehicles each day once the BNE Auto Mall becomes operational.

As the airport precinct continues developing, it is expected that active transport facilities will be more conveniently accessible to pedestrians and cyclists. Therefore, it is anticipated that more will walk or ride to the Auto Mall and the total number of private vehicle trips will decrease.

2.5 Trip Assignment

Assumed trip assignment patterns for traffic are indicated in Table 5.

Table 5 BNE Auto Mall Trip Distribution

Origin/Destination	Distribution	Additional Traffic
AM Peaks		
Moreton Drive	45%	357 *45% of the total additional traffic 794
Airport Drive	45%	357 *45% of the total additional traffic 794

Origin/Destination	Distribution	Additional Traffic
Nancy Bird Way	10%	79 *10% of the total additional traffic 794
PM Peaks		
Moreton Drive	45%	375 *45% of the total additional traffic 833
Airport Drive	45%	375 *45% of the total additional traffic 833
Nancy Bird Way	10%	83 *10% of the total additional traffic 833

3 Car Parking

The Auto Mall is intended to be an integrated destination. This is demonstrated by the anticipated levels of internalisation (trips that are contained) within the development. Combined with the desire for a strong design outcome for the area, it is important that the requirement for levels of parking provision does not drive behaviour in respect of the built environment.

Due to the unique proposition of the Auto Mall development, site specific car parking requirements have been developed. This is to ensure that formal car parking does not drive the design of developments (i.e. limiting gross floor area (GFA) to reduce the number of car parks). The relationship between number of employees and visitors to the type of uses planned in the Auto Mall is not directly related to the floor area of the built form. This is due to:

- Car showrooms being designed to best showcase the product and employee space being minimal (ancillary)
- The attractiveness of the brand experience generating visitation rather than the floor area.

To ensure that the requirement for formal car parking does not drive the design outcome, an approach has been adopted that relates car parking provision to the overall lot area that will accommodate automotive dealerships and the brand experience centres. From observation of auto showrooms within the wider Brisbane are, traditional car showrooms occupy approximately 20% of the overall lot area – the lot area is approximately 5 times the GFA.

Brisbane City Council's (BCC) Planning Scheme 6.31 Part 6 Car parking space standards (2014) has been used as a baseline guide to determine the number of parking spaces required for the Auto Mall development. The Council rates used for reference are 3 spaces per 100 m^2 for GFA. Using the conversion of lot area generally being 5 times the GFA for auto showrooms, the equivalent number of car parking spaces would be 0.6 spaces per 100 m^2 lot area.

However, given there is no on-street parking available at the BNE Auto Mall, a conservative minimum rate of **0.75 car parking spaces per 100 m^2 of lot area** is recommended for each lot. The spaces subject to this ratio will accommodate parking for visitors and staff only. Spaces used for operations (i.e. display areas, servicing, repairing, detailing, reconditioning etc.), will be considered separately, but will not encroach on or compromise the spaces that have been dedicated for visitors and staff.

It is assumed that the small pockets of the retail land use within the Auto Mall are likely to be mostly ancillary uses, and therefore will not generate a demand for car parking on their own. Furthermore, the parking rate adopted for the auto showroom and brand experience centres are conservative, hence sufficient additional parking will be provided should retail areas generate some requirement for parking.

The car parking rates apply to the provision of spaces for visitors and employees only. Areas for the storage and showing of vehicles are related to the design and layout of the auto showroom and not subject to development requirements.

The level of parking derived from the rates indicates the level of car parking required for the Auto Mall to function. BAC offers a number of parking products across the site and the opportunity exists to offset 'within precinct' parking by using space at other precincts and connecting to the Auto Mall via other modes.

Parking to be provided will be in accordance with the rates outlined in Table 6. The final lot areas will determine the level of parking to be provided and the design and layout of the facility will incorporate appropriate parking and movement. Each lot will need to demonstrate accordance with the required parking levels.

It is important to note that car parking rates have only been developed for normal operations and do not address the potential parking requirements for events held at the test track. Event parking can be accommodated offsite at the Central Parking Area and Banksia Place and temporary locations as illustrated in Figure 7 below.

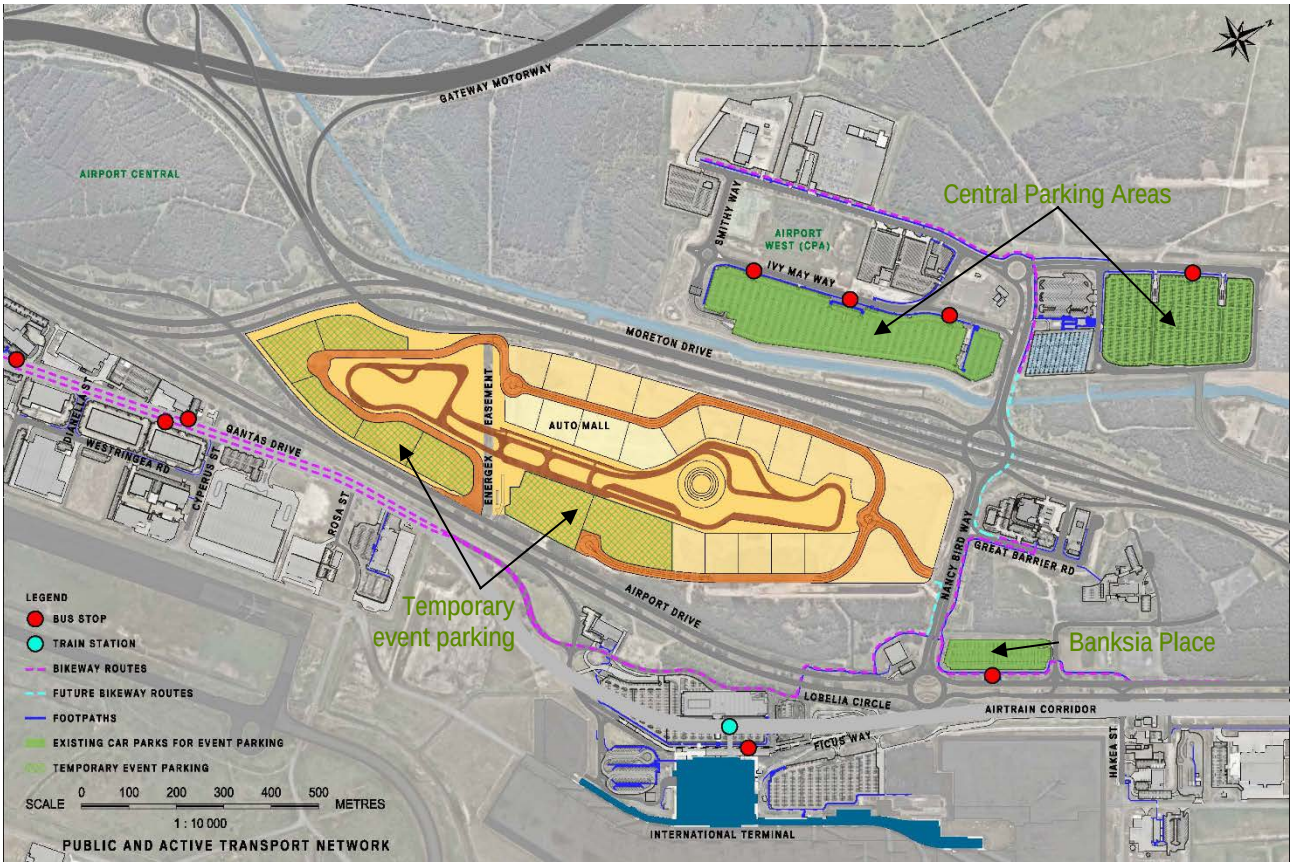


Figure 7 Event parking options

4 Traffic Impact Assessment

The purpose of the traffic impact assessment is to identify and assess impacts the BNE Auto Mall may have on the surrounding road network.

A review and summary of all available traffic data for the intersections (where available) was undertaken, to support SIDRA analysis. Performance has been assessed using SIDRA software for the AM peak (0800-0900) and PM Peak (1600-1700) for the year of full operation (2023). For this project, the following has been assessed:

- The impacts on Nancy Bird Way/Auto Mall Access
- The impacts on Airport Drive/Auto Mall Access

This assessment has carried forward assumptions made (by Jacobs) regarding the trip generation as a result of the new international P2 car park in that no additional traffic will be generated as a result. The assumption is premised on the fact that traffic increases based upon passenger demand rather than car park supply.

The assessment has been undertaken in accordance with the expected vehicle movements during the morning and evening peak periods after the BNE Auto Mall opening. All SIDRA calculations are appended to this report in Appendix A.

4.1 Impacts on road operations

4.1.1 Capacity constraints on road network

The main capacity constraints on a road network are on the intersections where traffic converges and intersects. The intersecting movements reduce the capacity of the traffic flow. Aurecon have sought to establish the operational impacts of the BNE Auto Mall on the intersections, noting that if these operate effectively, the road network will also function effectively.

4.1.2 SIDRA Intersection Analysis

SIDRA Intersection is a key piece of industry software used to analyse the performance of signalised and unsignalized intersections under different traffic loadings.

Key SIDRA parameters for measuring intersection performance, reported here, include the following:

- **Level of Service (LoS)** - An index of the operational performance of traffic on a given roadway, traffic lane, approach, intersection, route or network. This provides a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A to F scale, with LoS A representing the best operating conditions from the traveller's perspective and LoS F the worst.
- **Degree of Saturation (DoS)** - Also known as the volume to capacity ratio (v/c ratio) is the ratio of arrival (demand) flow rate to capacity during a given flow period. Up to 0.6 is excellent, 0.8 to 0.9 is fair, and above 1.0 represents very poor, congested conditions. The target DoS for unsignalized intersections is no more than 0.8. The maximum permissible DoS for priority intersections is 0.8 and 0.85 for roundabouts.
- **Average Delay** - The delay time, in seconds, which can be expected over all vehicles making a movement in the peak hour. More than 80 seconds of delay on a movement equates to a Level of Service of F and usually indicates severely congested conditions, while 20-50 seconds can be within acceptable limits.
- **95th Percentile Queue** - The maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour. The acceptability of this length varies according to site conditions but as a minimum it is important to at least achieve sight distance to the back of queue to avoid a safety risk, and to minimise queuing and therefore reduce congestion.

SIDRA has been used to assess intersection performance with and without the BNE Auto Mall project for each of the identified intersections for the AM and PM peak hours. Also, as agreed with BAC, the baseline analysis has utilised a 5% year on year growth until 2023.

The current layout at the Airport Drive/ BNE Auto Mall Intersection illustrated in the figure below.

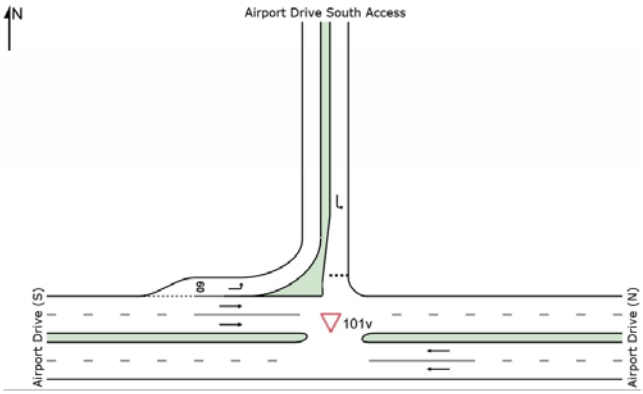


Table 6 Airport Drive/ BNE Auto Mall Performance Summary

Airport Drive/ BNE Auto Mall	With Project (2023)	
	AM Peak	PM Peak
DoS	0.384	0.384
Highest Average Delay (sec)	1.1	1.1
Queue length (m)	6.9	7.3

In 2023 with the BNE Auto Mall Project, this intersection operates with a DoS of 0.384 in the AM and PM peaks. There will be a highest average delay of one second or less with a maximum queue length of 7.3m in the morning and evening peak hours. These are within acceptable ranges for an intersection and as such, there will be no discernible impact on the access point from Airport Drive from operational traffic.

It is worth noting that the proposed new signalised intersection on Airport Drive for the International Terminal Building Multi-Level Car Park P2, together with strategically placed signage within the vicinity, will direct visitors along the Airport Drive therefore taking the pressure off the existing intersection at Airport Drive/Nancy Bird Way.

The current layout at the Nancy Bird Way/ BNE Auto Mall Intersection illustrated in the figure below.

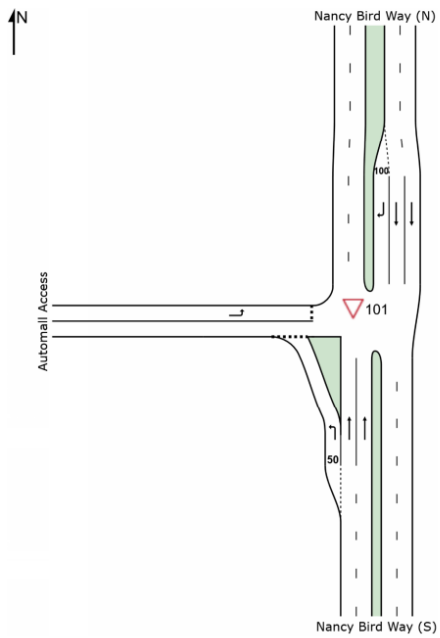


Table 7 Nancy Bird Way/ BNE Auto Mall Intersection Performance Summary

Nancy Bird Way/ BNE Auto Mall Intersection	With Project (2023)	
	AM Peak	PM Peak
DoS	0.326	0.326
Highest Average Delay (sec)	1.7	1.8
Queue length (m)	8.5	9.0

In 2023, with the BNE Auto Mall Project, the intersection operates with a DoS of 0.326 in the AM and PM peaks. There will be a highest average delay of less than two seconds with a maximum queue length of 8.5 m in the morning peak hour and 9.0 m in the evening peak hour. These are within acceptable ranges for an intersection and as such, there will be no discernible impact on the access point from Nancy Bird Way from operational traffic.

4.2 Conclusion

The current road network operates within its design capacity, and modelling for the project related traffic in 2023 confirms that expected project traffic has only negligible impacts on its continued performance. On this basis, it can be concluded that the introduction of additional traffic volume as a result of the operation of BNE Auto Mall will have a minimal impact on the operation of the current road network.

All SIDRA calculations are provided in Appendix A.

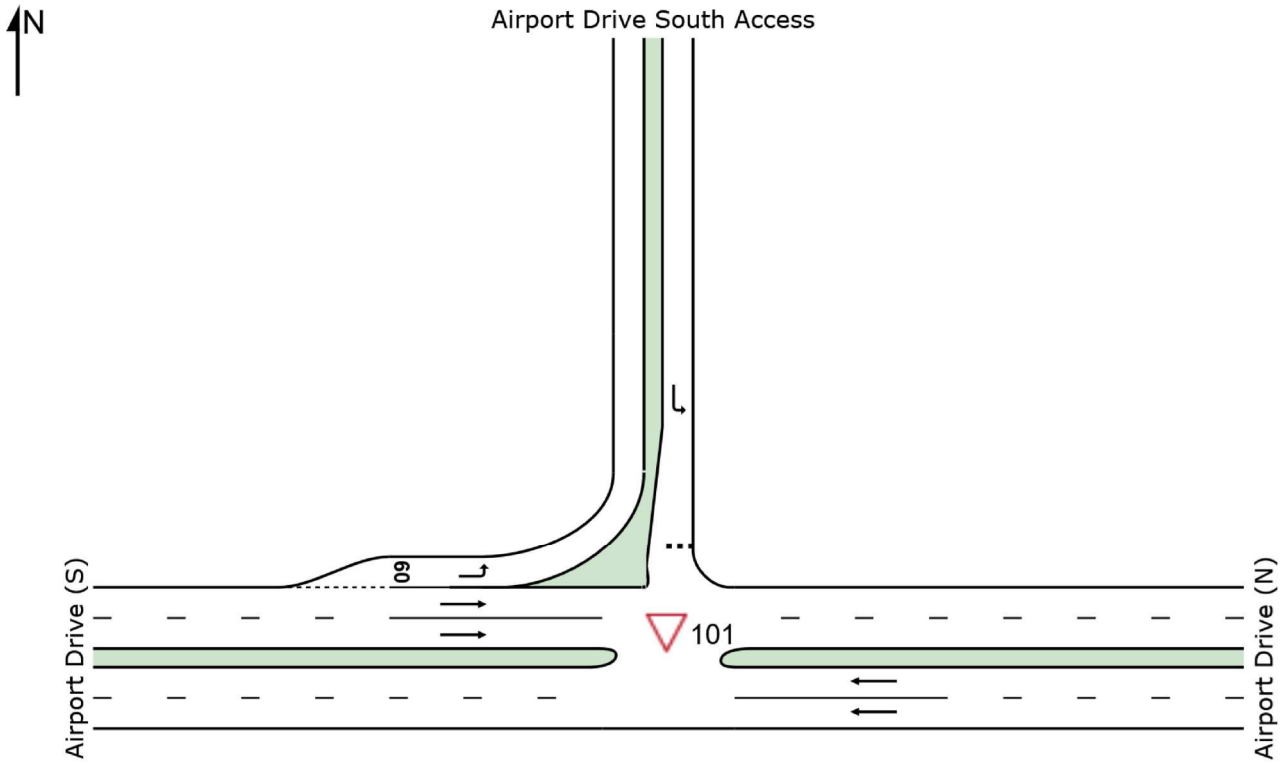
It should be noted that a new signalised intersection on Airport Drive is proposed for the International Terminal Building Multi-Level Car Park P2. The distance between this signalised intersection and the proposed access to the Auto Mall on Airport Drive is approximately 600 m. While some minor queuing may be experienced, particularly for vehicles turning right from Airport Drive (northbound) into the Multi-Level Car Park P2, a previous assessment on the signalised intersection suggests a queue length of only 49 m (in 2020), which was not considered to constitute a significant delay.

Appendix A
SIDRA Calculations

SITE LAYOUT

Site: 101 [Airport Drive/Auto Mall Access (2023 AM LILO)]

New Site
Giveway / Yield (Two-Way)



SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: AURECON AUSTRALASIA PTY LTD | Created: Friday, 5 April 2019 2:06:13 PM
Project: C:\Users\Denise.Wang\Desktop\BAC Traffic Impact Assessment\Operational\SIDRA\Project1.sip7

MOVEMENT SUMMARY

Site: 101 [Airport Drive/Auto Mall Access (2023 AM LILO)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Airport Drive (N)											
5	T1	1340	18.0	0.384	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1340	18.0	0.384	0.1	NA	0.0	0.0	0.00	0.00	59.9
North: Airport Drive South Access											
7	L2	179	18.0	0.219	8.1	LOS A	0.9	6.9	0.47	0.71	51.1
Approach		179	18.0	0.219	8.1	LOS A	0.9	6.9	0.47	0.71	51.1
West: Airport Drive (S)											
10	L2	179	18.0	0.109	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
11	T1	670	18.0	0.192	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		849	18.0	0.192	1.2	NA	0.0	0.0	0.00	0.11	58.6
All Vehicles		2368	18.0	0.384	1.1	NA	0.9	6.9	0.04	0.09	58.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Airport Drive/Auto Mall Access (2023 PM LILO) - Copy]

New Site
Giveway / Yield (Two-Way)

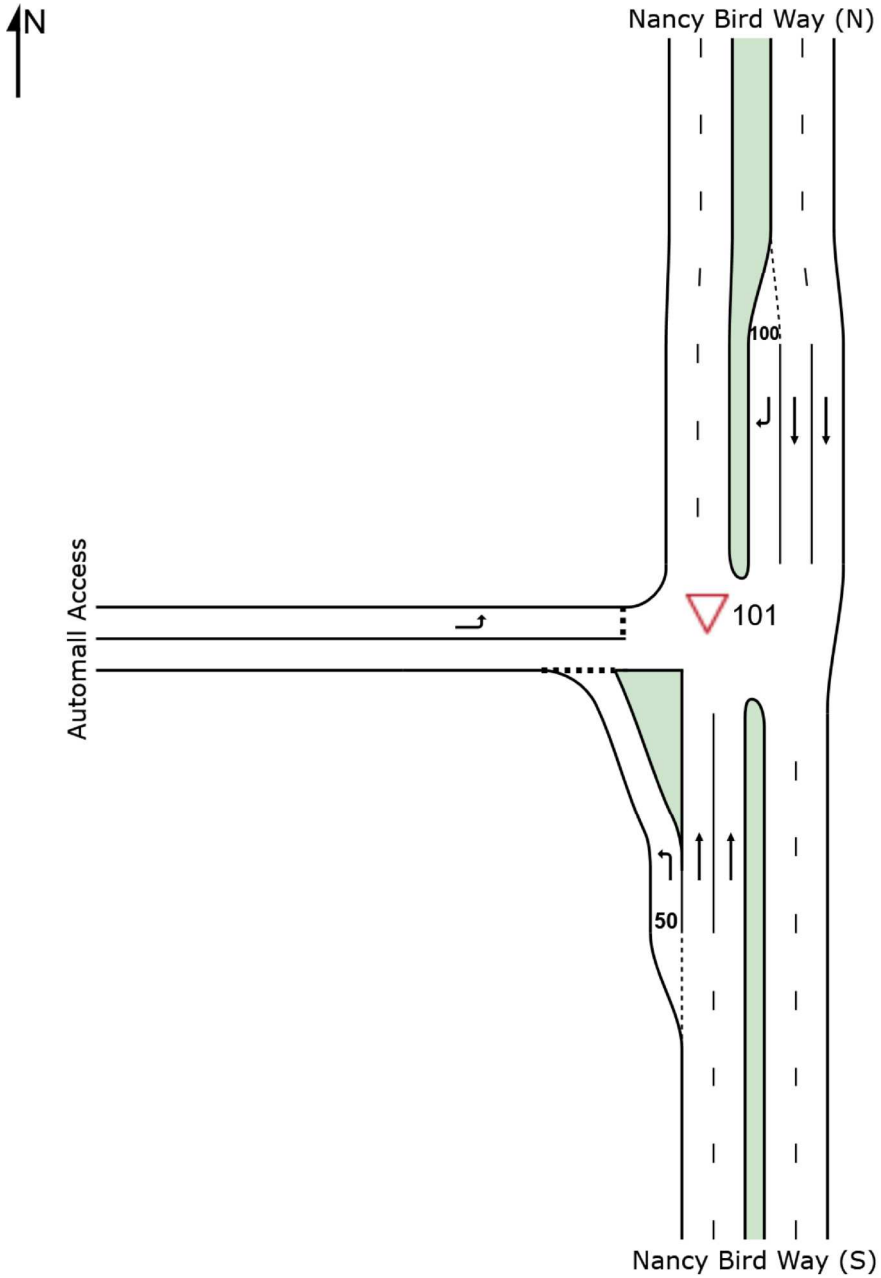
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: RoadName											
5	T1	1340	18.0	0.384	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1340	18.0	0.384	0.1	NA	0.0	0.0	0.00	0.00	59.9
North: RoadName											
7	L2	188	18.0	0.230	8.1	LOS A	0.9	7.3	0.47	0.71	51.1
Approach		188	18.0	0.230	8.1	LOS A	0.9	7.3	0.47	0.71	51.1
West: RoadName											
10	L2	188	18.0	0.114	5.8	LOS A	0.0	0.0	0.00	0.52	54.3
11	T1	670	18.0	0.192	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		858	18.0	0.192	1.3	NA	0.0	0.0	0.00	0.11	58.6
All Vehicles		2386	18.0	0.384	1.1	NA	0.9	7.3	0.04	0.10	58.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [Nancy Bird Way/Auto Mall Access (2023 PM LIRILO) - Copy]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Nancy Bird Way/Auto Mall Access (2023 AM LIRILO)]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nancy Bird Way (S)											
1	L2	40	18.0	0.033	6.6	LOS A	0.1	1.0	0.31	0.54	52.5
2	T1	402	18.0	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		442	18.0	0.115	0.6	LOS A	0.1	1.0	0.03	0.05	59.2
North: Nancy Bird Way (N)											
8	T1	1139	18.0	0.326	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
9	R2	199	18.0	0.244	8.5	LOS A	1.0	8.5	0.53	0.75	50.6
Approach		1338	18.0	0.326	1.3	NA	1.0	8.5	0.08	0.11	58.3
West: Automall Access											
10	L2	199	18.0	0.204	7.0	LOS A	0.8	6.7	0.36	0.62	51.8
Approach		199	18.0	0.204	7.0	LOS A	0.8	6.7	0.36	0.62	51.8
All Vehicles		1979	18.0	0.326	1.7	NA	1.0	8.5	0.10	0.15	57.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Nancy Bird Way/Auto Mall Access (2023 PM LIRILO) - Copy]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nancy Bird Way (S)											
1	L2	42	18.0	0.035	6.6	LOS A	0.1	1.1	0.32	0.55	52.5
2	T1	402	18.0	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		444	18.0	0.115	0.6	LOS A	0.1	1.1	0.03	0.05	59.2
North: Nancy Bird Way (N)											
8	T1	1139	18.0	0.326	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
9	R2	209	18.0	0.257	8.6	LOS A	1.1	9.0	0.53	0.75	50.5
Approach		1348	18.0	0.326	1.4	NA	1.1	9.0	0.08	0.12	58.2
West: Automall Access											
10	L2	209	18.0	0.215	7.0	LOS A	0.9	7.1	0.36	0.62	51.8
Approach		209	18.0	0.215	7.0	LOS A	0.9	7.1	0.36	0.62	51.8
All Vehicles		2001	18.0	0.326	1.8	NA	1.1	9.0	0.10	0.16	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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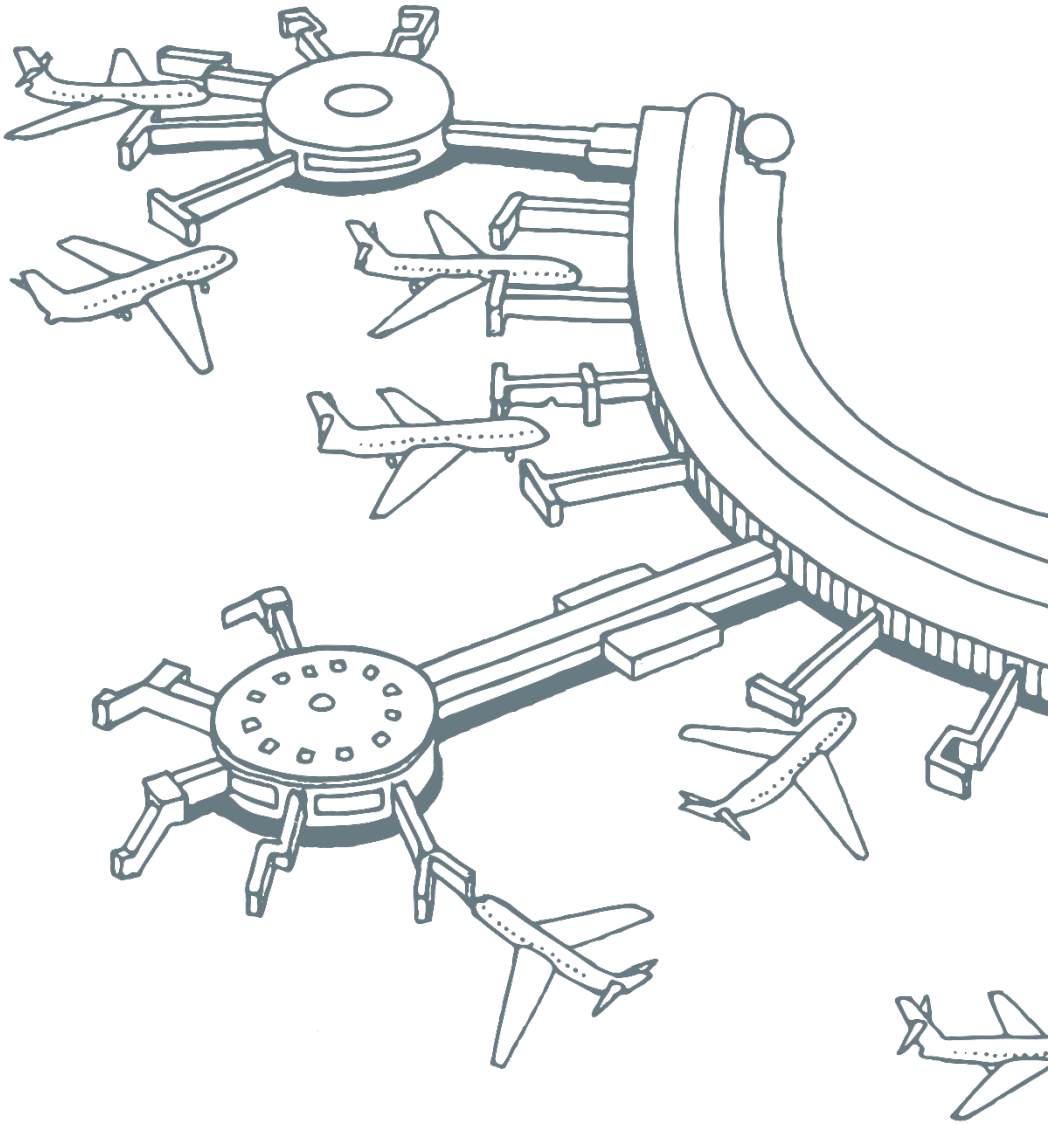
APPENDIX G
CONTAMINATION SUMMARY – TECHNICAL MEMORANDUM



TECHNICAL MEMORANDUM

DATE 26 March 2019 18107809-001-TM-Rev0

TO Paul Lutz, Brisbane Airport Corporation Pty Limited

CC Greg Whitmore

FROM Andrew Howes **EMAIL** ahowes@golder.com.au

CONTAMINATION SUMMARY – TECHNICAL MEMORANDUM
PROPOSED AUTO MALL DEVELOPMENT, BRISBANE AIRPORT

1.0 INTRODUCTION

Brisbane Airport Corporation Pty Ltd (BAC) commissioned Golder Associates Pty Ltd (Golder) to complete a soil and water quality summary report for the proposed Auto Mall at Brisbane Airport. The proposed Auto Mall Precinct development is situated on an area between Moreton Drive, Nancy Bird Way and Airport Drive at the Brisbane Airport in Queensland (site, **Figure 1**).

The aim of the technical memorandum is to provide a summary of results from previous contamination investigations and construction monitoring. This includes a review of results against the Heads of EPAs (HEPA) per- and polyfluoroalkyl substances National Environmental Management Plan (PFAS NEMP) that was released in January 2018 since previous contamination investigations were reported. It also includes an update of the conceptual site model (CSM) and recent surface water data relevant to the construction phase at the site.

2.0 PROJECT DETAILS

The proposed project site covers an area of approximately 51.3 hectares, previously a low-lying area heavily vegetated with casuarina forest and mangroves. The original surface level was at approximately RL 2.4-2.5 m AD[1]. Large areas of the site were influenced by tidal waters and seasonal groundwater was shallow, interacting with the surface soils. An unlined drain cut through the north-eastern corner of the site. An Energex electrical substation and associated cables easement cuts the site in two, as illustrated in **Figure 1**.

This first phase of the project is currently being undertaken in accordance with the Environmental Assessment Report (EAR) which identified the potential environmental risks, and associated management and monitoring measures to be implemented for the disturbance activities. It included vegetation clearing, ground improvement works, filling and surcharge to develop the land. The next phase of works will be subject to a Major Development Plan with the scope to include the construction of the performance track, roads and services, and dealerships.

[1] Aerodrome Datum

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Three land development stages were proposed as described below:

- Development Stage 1: Track, roads and selected development lots; lots north of the Energex easement between the track and Moreton Drive, and the Track and Nancy Bird Way.
- Development Stage 2: Development lots south of the Energex easement.
- Development Stage 3: Development lots north of the Energex easement between the track and Airport Drive.

The excavation of the perimeter drains and flood storage areas has been undertaken in stages with tidal waters prevented from entering the perimeter drains by temporary bunding. It is anticipated that tidal flaps will be installed during operation of the development (see also Section 6.5).

The designed construction works had the following ground disturbances:

- Excavation of perimeter drains, with invert levels (IL) ranging from 0.2 m AD to 2.4 m AD.
- Surcharge with imported material, to an assumed maximum of 9.5 m AD used to consolidate soft soils underlying this site and was designed to result in settlement of existing ground surface by up to 1.5 m.

Final site levels after settlement are designed to range from about 3.75 to 4.25 m AD.

Acid sulfate soils (ASS) have been addressed under a separate cover and an ASS Management Plan has been prepared for the site (both documents are referenced in Section 3.1). In addition, a Construction Environmental Management Plan (CEMP) has been prepared for the site to manage risks to workers and off-site human and ecological receptors. A Project Environmental Management Plan (Aurecon, 2017) has also been prepared, which is relevant to monitoring and managing of environmental values in this document, such as surface water and groundwater. The site's ASS MP and CEMP details monitoring to be undertaken during construction across a broad range of media but includes groundwater and surface water in accordance with the PFAS NEMP and the National Environmental Protection (Assessment of Site Contamination) Measure, 1999 (as amended in 2013). These documents address changes to the construction process and can be amended if unforeseen events occur.

3.0 BACKGROUND

3.1 Previous Investigations

Previous investigations undertaken at the site are listed below:

- Golder Associates, Acid Sulphate Soil and Contamination Desktop Review, Proposed Auto Precinct Brisbane Airport, February 2015, reference 1460490-002-R-Rev0 (Golder 2015).
- Golder Associates, Contamination Assessment, Proposed Auto Mall Precinct Stage 1, 5 June 2017, reference 1538021-013-R-Rev2 (Golder 2017b).
- Golder Associates, Contamination Assessment, Proposed Auto Mall Precinct Stage 2, 1 June 2017, reference 1538021-011-R-Rev2 (Golder 2017a).
- Golder Associates, Acid Sulphate Soil Assessment, Proposed Auto Mall Precinct Stage 1, 5 June 2017, reference 1538021-014-R-Rev2 (Golder 2017c).
- Golder Associates, Acid Sulphate Soil Assessment, Proposed Auto Mall Precinct Stage 2, 5 June 2017, reference 1538021-012-R-Rev1 (Golder 2017d).
- Golder Associates, Proposed Auto Mall Precinct, Acid Sulphate Soil Management Plan, February 2019, reference 1664971-001-R-Rev5 (Golder 2019).

- Golder Associates, Mineral Sands at Stage 2 of the Auto Mall Development – Results of the Assessment, 10 October 2018, 1664971-045-TM-Rev0 (Golder 2018)
- PSK, Site Monitoring Future Auto Mall Precinct – Stages 1, 2 and 3, Brisbane Airport, November 2018, 12 December 2018, 0517-005-020
- ALS Environmental, Surface Water Monitoring Results, sampled 7 February 2019, reference EB1902986 and PSK figure of sampling locations from tidal areas outside of the AutoMall site
- PSK Report, Site Monitoring Future Auto Mall Precinct – Stages 1, 2 and 3, Brisbane Airport, January 2019, 27 February 2019, 0517-005-022.
- PSK Technical Memorandum, PFAS Site Monitoring Future Auto Mall Precinct – Stages 1, 2 and 3, Brisbane Airport, January 2019, 27 February 2019, J0517-005-022.

In summary, Golder completed a desktop assessment of contamination in 2015 (Golder 2015), followed by detailed contamination investigations of soil and groundwater in 2015 and 2016 (Golder 2017a and Golder 2017b). The investigations by Golder considered the site as two portions being Stage 1 and Stage 2 as advised by BAC at the time of works being commissioned. This staging has been amended to be consistent with the latest staging in Section 2.0. Golder has also completed assessment of acid sulphate soils (ASS) in parallel with contamination investigations in addition for ASS management plans (Golder 2017c, Golder 2017d and Golder 2019).

The results are discussed in the respective reports. However, a summary of outcomes of those reports is as follows:

- Groundwater on site was shallow, measured to be as little as 710 mm from the surface. Groundwater is likely to be shallower at times of severe rain events.
- The key chemical of concern was PFAS, however, some metal concentrations (nickel and zinc) were also present above guidelines in groundwater.
- No known or potential PFAS contaminating activities were identified occurring (presently or in the past) on or in the immediate vicinity of the site.
- Concentrations of PFAS in soils and groundwater were below levels protective of human health and ecological receptors (besides guidelines available at the time, which related to consumption of fish).
- Diffuse levels of PFAS were present at low levels in soil and groundwater, generally at concentrations lower than areas of the airport closer to the known sources. On that basis, a qualitative risk assessment for the PFAS concentrations in groundwater beneath this site, suggests a low risk outcome associated with groundwater migration to the nearby and downstream surface water bodies.
- A qualitative risk assessment of expected PFAS impacted groundwater seepage entering the proposed site drain also suggested a low risk outcome for exposure downstream tidal drains and waterways.

Golder reported in 2018 an assessment summary of material suspected to be mineral sands (Golder 2018) – see Section 6.6. Most recently PSK undertook construction monitoring for the site of groundwater, surface water, dust, noise and vibration monitoring between December 2017 and November 2018 (PSK 2018). Construction monitoring of COPC was undertaken in groundwater for metals and PFAS. Whilst monitoring of surface water was undertaken for metals this was in relation to assessment of ASS.

Since the findings of the Golder contamination investigations being reported in 2017, the PFAS NEMP was released in January 2018. This technical memo provides a summary of the existing contamination investigation results and construction monitoring results against the PFAS NEPM.

3.2 Contaminants of Potential Concern

The contaminants of potential concern (COPC) from the following potential contamination sources were previously investigated by Golder at the site:

- PFAS in soil and groundwater associated with historical use in AFFF used for firefighting elsewhere at the airport.
- Heavy metals, mineral sands and radioactivity associated with BAC's activities listed as site 28 on its Contaminated Site Register (CSR). The location of BAC CSR site 28 is provided on **Figure 1**. It is understood that mineral sands may have been placed with other imported fill materials on site in the past. The mineral sands are likely to be sourced from the mining activities on North Stradbroke Island where rutile, zircon and ilmenite were mined (and continue to be mined). These minerals contain titanium and zirconium metals as well as associated naturally occurring radioactive materials (NORMs).
- Hydrocarbons, heavy metals and organochlorine pesticides in soil associated with the former constructions yard at the southern end of the site. This former activity was identified from review of historical aerial photographs to be present in 2009 and was likely associated with the works for the construction of Moreton Drive at that time. Hydrocarbons include total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylenes (BTEX) and polycyclic aromatic hydrocarbons (PAH).

4.0 SITE SETTING

4.1 Topography

The proposed site was historically a low lying plain drained by several channels. At the time of the investigations by Golder in 2015 and 2016, portions of the site had been filled with dredged sand, though with a limited thickness of 0.05 to 0.7 m. The predevelopment surface levels were in the 2.4-2.5 m AD range. Surcharging activities are currently being undertaken and final site levels after settlement are designed to range from about 3.75 to 4.25 m AD.

4.2 Hydrogeology

Previous investigations at the site have indicated that unconfined groundwater is typically present within about 0.6 m to 2 m below the original ground surface. Groundwater levels at the site are influenced by tidal fluctuations and seasonal rain events and expected to be generally at their highest at the end of the wet season in late summer. There is likely to be significant vertical movement of groundwater through the original shallow lithology with unrestricted discharge into the existing unnamed drains prior to earthworks commencing. More site-specific detail of groundwater movement and activity is provided in the Stage 1 and Stage 2 reports (Golder 2017b and Golder 2017a) and which is summarised in Section 6.2).

4.3 Hydrology

Prior to development, an open drain cut through the north-eastern corner of the site, allowing surface water and elevated groundwater to have flowed off site. Surrounding the site is Landers Pocket drain, which is the closest surface water body feature, located about 100 m west of the project area beyond Moreton Drive. Surface water in Landers Pocket drain flows north east for about 1 km from the site before discharging into Kedron Brook Floodway Drain, eventually discharging into Kedron Brook (also see EPP EV and WQO reference in Section 5.0). The ultimate receiving environment of surface water from Kedron Brook is Moreton Bay. Upon completion, the proposed perimeter drains will flow towards either end of the site and will result in discharges into Landers Pocket drain and subsequently Kedron Brook. Tidal flaps will reduce the risk of tidal water flowing backwards into the perimeter drains. During the current construction phase, these perimeter drains are isolated from external tidal drains by temporary bunding.

Additional site-specific information relating to historic surface water and its current interaction with the surrounding receiving environment is provided in Sections 6.5 and 6.6 of this document.

4.4 Soil Landscape

The Soil Landscapes of Brisbane and South-Eastern Environs, Queensland, CSIRO 1:100,000 scale Map Sheet (1985), indicates that the site is situated within alluvial landscapes likely to comprise the Woongoolba - WO soil group comprising the following:

- Dominant Soil Group – ‘Humic gleys, peaty gleys’ and ‘solonchaks’
- Landscape and Parent Geology – Low (coastal) plains of alluvium and narrow depressions.

This soil profile is young alluvium and frequently contains moderate to high concentrations of pyritic material and fine organic matter. This soil unit is generally associated with ASS.

4.5 Geology

The 1:100,000 scale Brisbane Geological map (1990) indicates that the site contains recent alluvial deposits of Holocene age of ‘undifferentiated coastal plains’, comprising mud and sand deposits. Local experience indicates that the site is underlain by Upper Holocene-age alluvia overlying Lower Holocene-age alluvia, with a relict Pleistocene alluvial land surface below. Residual soils and rock are present below the alluvia. Holocene alluvial deposits are typically associated with ASS formation.

5.0 ASSESSMENT GUIDELINES

The following key regulatory drivers and guidance documents have been considered in selecting assessment guidelines.

PFAS

- *HEPA PFAS NEMP,* January 2018 (NEMP 2018).
- Australian Government – Department of Health *Guidance Health Based Guidance Values for PFAS for use in Site Investigations in Australia*, 2017 (Health 2017).
- Queensland DES, Model Operating Conditions – ERA 60 – Waste Disposal, Version 3.02, June 2018.

Other contaminants

- Office of Legislative Drafting Attorney-General's Department, *Airports (Environment Protection) Regulations 1997* (AEPR 1997 guidelines).
- *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended in 2013 (NEPM). The NEPM has been recognised as the primary national guidance document for the assessment of site contamination in Australia.
- *Queensland Water Quality Guidelines* 2009, as amended in 2013 (QWQG 2009), which provides an overarching framework for the management of waters (including groundwater) under the Environmental Protection Act 1994.
- Department of Environment and Resource Management*, Environmental Protection (Water) Policy 2009, Brisbane Creeks – Bramble Bay environmental values and water quality objectives, Basin No. 142 (part), including Bald Hills, Cabbage Tree, Downfall, Kedron Brook, Nudgee and Nundah creeks*, July 2010. EVs define the uses of the water by aquatic ecosystems and for human uses (e.g. drinking water, irrigation, aquaculture, recreation). WQOs define objectives for the physical, chemical and biological characteristics of the water (e.g. nitrogen content, dissolved oxygen, turbidity, toxicants, fish).

Analytical results will be compared against relevant risk-based guideline criteria as detailed below for each matrix.

5.1 Soil Assessment Guidelines

5.1.1 PFAS

The AEPR 1997 guidelines apply to airports in Australia and to all BAC land. However, AEPR 1997 do not include screening or acceptable levels for PFAS in soil.

The *Soil Criteria for Investigation* from the NEMP 2018 for PFAS in soil presented in **Table 1** below have been adopted for the initial assessment of risk for human health and direct and indirect ecological receptors exposure scenarios.

In light of the land use, the guidelines for industrial/commercial settings have been selected.

Table 1 Soil Guidelines for Investigation (NEMP 2018)

Exposure Scenario	PFOS+PFHxS	PFOA	Land use	Comment
Soil				
Human Health	20 mg/kg	50 mg/kg	Industrial/ commercial	The degree of conservatism in the soil criteria for investigation – human health-based guidance values (80% attributed to other exposure pathways) means that exceeding these values does not constitute a risk if other pathways are controlled.
Ecological Receptors – Interim soil – ecological indirect exposure	0.140 mg/kg (PFOS only)	-	Industrial/ commercial	Concentration in soil that is expected to protect against potential impacts on freshwater life from PFOS originating in soil that may enter the groundwater and subsequently discharge to a surface water body.
Ecological Receptors - soil direct toxicity	20 mg/kg	50 mg/kg	Industrial/ commercial	Direct exposure applies specifically to protection of organisms that live within, or are closely associated with, the soil, such as earthworms and plants. The direct exposure guidelines can be used to assess the possibility of harm to these organisms. In the absence of acceptable published guideline values for direct exposure, the Soil Criteria – Human Health are recommended as an interim position.

5.1.2 Other Contaminants Assessment Guidelines

AEPR 1997 apply to federal airports in Australia and therefore to BAC land. The site is not listed as an Area of Environmental Significance at Brisbane Airport, as such soil results were compared with the *Acceptable Limits for general areas* (Schedule 1, Table 2 of AEPR).

In addition, the following guidelines derived from NEPM 2013, Schedule B1 were also referenced as a general environmental screening tool for soil:

- *Health Screening Levels* (HSLs) for the protection of human health from exposure to vapour intrusion from volatile hydrocarbon impacts in soil. HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation pathway. The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures. They apply to different soil types, and depths below surface to greater than 4 m. For the program of works, the analytical data has been initially screened against the most conservative criteria for sand soils under an HSL-D commercial/industrial setting, for the protection of future site commercial users.
- *Health investigation Levels* (HILs) for the protection of human health under a HIL-D commercial/industrial setting, for the protection of future site commercial users from exposure to a wide range of contaminants.
- *Ecological Screening Levels* (ESLs) (coarse textured soil) for a commercial/industrial setting, for the protection of ecological receptors from petroleum hydrocarbons contamination.
- *Ecological investigation levels* (EILs) for a commercial/industrial setting, for the protection of ecological receptors from exposure to a wide range of contaminants.

5.2 Groundwater Assessment Guidelines

5.2.1 PFAS

The following water guideline values from NEMP 2018 have been adopted as initial assessment guidelines for human health and aquatic ecosystems' exposure to PFAS in groundwater.

The human health recreational guidelines have been included in the assessment, as drains in and surrounding the site discharge into larger surface water bodies (Kedron Brook then Moreton Bay) that may be accessed by the general public. Whilst there is negligible likelihood for groundwater/surface water to be used for drinking purposes within the Airport precinct, drinking water guidelines have been included for preliminary assessment of risk to workers resulting from accidental ingestion.

Though Brisbane Airport is a highly disturbed environment, relevant ecological receptors (Ramsar wetland) are present in its proximity; as such the guidelines for the protection of 95% of the species have been selected for the assessment.

Groundwater and surface water across Brisbane Airport can be fresh or marine, depending on the tide effects, whereas the receiving environment is marine; however, as per NEMP 2018, freshwater guidelines are to be used as interim marine guidelines in the absence of specific marine guidelines, and are applicable across the whole Airport area for PFAS. The assessment criteria adopted from PFAS NEMP 2018 are summarised in **Table 2**.

Table 2: Water guideline values (NEMP 2018)

Exposure scenario	PFOS/PFHxS[2]	PFOA	Comment
Human health – drinking water	0.07 µg/L	0.56 µg/L	Based on *Health 2017*
Human health – recreational water	0.7 µg/L	5.6 µg/L	Based on *Health 2017*
Aquatic Ecology - Freshwater/interim marine water	0.13 µg/L	220 µg/L	95% species protection – highly disturbed ecosystems

No water guidelines are currently cited in the NEMP to address impacts to human health resulting from ongoing consumption of fish/other aquatic species impacted by PFAS. The NEMP provides guidance on PFAS concentrations in the flesh of aquatic organisms. Biota sampling and analysis was beyond the scope of previous investigations.

5.2.2 Other Contaminants Assessment Guidelines

To assess groundwater quality, the results will be compared against AEPR 1997 *Accepted Limits of Contamination* for marine waters (Table in Schedule 2).

In addition, the following guidelines derived from NEPM 2013, Schedule B1 were also referenced as a general environmental screening tool for groundwater:

- *Groundwater Investigation Levels* for the protection of the marine aquatic ecosystems (Marine Water GILs).
- *Drinking Water Investigation Levels* for the protection of human receptor from direct ingestion of contaminated water (Drinking Water GILs).

[2] Sum of PFOS and PFHxS

- *Recreational Water Investigation Levels* for the protection of human receptor from direct contact with contaminated water (Recreational GILs).

Drinking water guidelines have been included for preliminary assessment of risk to workers resulting from accidental ingestion.

6.0 SUMMARY OF FINDINGS

The previous contamination investigation locations undertaken by Golder for soil and groundwater are indicated on Figure 1. Construction monitoring locations by PSK are included in **Attachment A**.

6.1 Sub-surface conditions

A summary of typical subsurface conditions encountered by Golder is as follows (Golder 2017a and Golder 2017b):

- **Topsoil** - Generally comprising loose silty sand and sandy clay, found at most locations to depths between 0.1 to 0.3 m bgl, overlying
- **Recent Alluvium (Holocene)** – Compressible, inter-bedded sandy clays and clayey sands (Upper Holocene) from approximately 0 to 3 m bgl (target depth).

Thicker layers of fill comprising gravelly material, with various percentages of fines, were encountered at several locations (AM-BH13, AM-BH14, AM-BH18, AM-BH24, AM-BH26), to a maximum depth of 1.65 m bgl.

Layers of material possibly associated with mineral sand deposition, known to have been historically present in the site surroundings, were noted at the following locations:

- AM-BH26 at 1.75-2.0 m (black mottling in clay)
- AM-BH25 at 0.5-0.6 m bgl (black fine to coarse sand in clay)
- AM-BH15 at 0.0-0.1 m bgl (dark brown silty sand)
- AM-BH16 at 0.0-0.1 m bgl (black sand in silty clay)
- AM-BH29 at 0.0-0.1 m bgl (dark brown silty sand).

6.2 Groundwater Quality and Levels

Groundwater quality sampling has been conducted by Golder in 2016 at fifteen monitoring well locations previously installed across the site (**Figure 1**) to provide a ‘snapshot’ of the baseline groundwater conditions) (Golder 2017a and Golder 2017b). PSK has also assessed the groundwater quality and levels (PSK, 2018).

The following ground water conditions were indicated:

- Stabilised groundwater levels were measured in the completed monitoring wells ranging from 0.87 to 3.08 m AD. The general groundwater flow direction is west to north-west towards Landers Pocket Drain.
- The field pH results (pH 4.1 to pH 7.2) indicated that the groundwater was acidic to near neutral. The lowest pH levels occurred in wells along the western site boundary.
- Electrical conductivity (EC) values were recorded ranging from 1 mS/cm to 60.9 mS/cm indicating brackish to saline water conditions;

6.3 Soil Analysis

Soil contamination assessments at the site have been undertaken by Golder in 2015 and 2016 (Golder 2017a and Golder 2017b). At the time of investigations being undertaken most of the site was covered with casuarina forest and several creeks/drains intersected the site. Thus, the investigation locations were subject to site access and existing fire-ant trails were utilised where possible. Boreholes were positioned at 100 m intervals along the proposed drain alignments. Investigation in the remaining area were undertaken on a 250 m triangular grid in areas not previously investigated for acid sulphate soils with contamination sampling combined with these.

There were 29 boreholes locations in Stage 1 and Stage 2 (and accessible [dry] areas of Stage 3) for soil sampling that were drilled to 3 m below ground (bgl). Ground disturbance below 3 m bgl were not expected for the site development. COPC were analysed at a rate of one to two samples per borehole including assessment of different strata within the borehole.

Although the density of sampling locations is low compared to AS4482.1, it is considered that there was broad scale site coverage for residues associated with historical importation of fill and use of AFFF at the airport. The site appears not to be a local source of PFAS, with activities involving AFFF being off-site and at a significant distance away. Also, there was targeted sampling of potential contaminations sources of BAC CSR site 28 and the former construction yard activities located in the southern area of the site (not shown on Figure 1). The dataset used to assess the contamination status of the site indicated low concentrations of most contaminants compared to guidelines, as well as low standard deviations compared to the mean of the data for COPCs. This indicates consistent results over the site with limited evidence of 'hotspots', or limited areas where higher contamination from historical activities may exist.

Therefore, the quantum of sampling was likely suitable to provide an indication of broadscale contamination on site.

The soil analytical results, including comparisons with the relevant assessment guidelines are presented as follows:

- Table 3: Soil laboratory analysis PFAS.
- Table 4: Soil laboratory analysis heavy metals and pesticides
- Table 5: Soil laboratory analysis TRH, BTEX and PAH

The PFAS assessment guidelines adopted are those updated in the NEMP 2018. Key analytical results from the investigation are as follows:

- PFAS was present at concentrations above the laboratory limit of reporting (LOR) in four locations (AM-BH31 0.25-0.5m, AM-BH32 2.75-3 m, AM-BH14 0.25-0.5 m and AM-BH25 0.25-0.5) of the 52 samples tested. PFAS compounds above the LOR were limited to PFOS, PFHxS and PFTeDA present at low concentrations. PFAS concentrations in all sample analysed were below the adopted human health and environmental guidelines for commercial/industrial site settings.
- PFAS leachability was not undertaken in 2016. The PFAS NEMP (2018) now recommends leachability testing on soils to assess potential impacts of PFAS to groundwater and from run-off to surface water. Golder considers that retrospective testing for leachable PFAS in a new site assessment is not necessary for the following reasons:
    - only PFOS in three samples out of 52 samples from 25 sampling locations contained PFAS concentrations higher than LOR
    - the concentrations of PFAS in soil was considered low compared to the adopted soil guidelines

- trends in PFOS in soil were as follows:
  - PFOS was present in borehole AM-BH14 (Stage 2, west) at a concentration of 0.0003 mg/kg (LOR = 0.0002 mg/kg) in the shallow soil sample, which was converted to groundwater monitoring well AM-MW14, however the deeper sample has no PFOS above LOR
  - PFOS was present in borehole AM-BH25 (Stage 2, north) at a concentration of 0.002 mg/kg (LOR=0.0002 mg/kg) in the shallow soil sample, however the deeper sample has no PFOS above LOR
  - PFOS was present in borehole AM-BH32 (Stage 1, control) at a concentration equal to the LOR of 0.0002 mg/kg) in a deep soil sample.
- exceedances of PFOS in groundwater for drinking water (not a likely use for water) were as follows:
  - in well AM-MW14 (the same location as soil bore AM-BH14)
  - in well AM-MW16 (Stage 2, SE corner).
- it is possible that the PFOS near borehole AM-BH14 is responsible for the PFOS in groundwater within the same area, however it appears that attenuation through the soil was partially effective and, in any case, the amount of PFOS in groundwater met the criteria for the key human health exposure (recreational) and for the protection of ecological receptors with 95% species protection
- similarly, the concentrations in well AM-BH16 was below key criteria and the soil in which the PFOS was present (AM-BH25 and BH32) did not influence this groundwater quality.

- With reference to heavy metals, no exceedances of the AEPR guidelines are noted in the samples for the compounds tested. With reference to NEPM guidelines, exceedances of the EILs[3] are noted:
  - for nickel in 2 samples (AM-BH24 at 0.25-0.5 m and AM-BH26 at 0.25-0.5 m) in the western portion of the site
  - for zinc in 2 samples (AM-BH10 at 0.25-0.5 m and AM-BH15 0.25-0.5, in duplicate QAQC005), in the western and eastern portions of the site respectively
  - however, the 95% upper confidence limit of the mean concentration (UCL) calculated for nickel and zinc for the 14 samples of shallow soils collected at the Stage 2 of the site is equal to 34.64 mg/kg and 62.36 mg/kg respectively, with the standard deviations at 23.07 mg/kg and 54.14 mg/kg respectively. No individual result exceeded 250% of the assessment guidelines, therefore no 'hot spots', as defined in the NEPM 2013, have been identified, and standard deviations are lower than 50% of the respective guidelines. Therefore, based on this statistical approach, the overall soil quality is considered to meet the EILs for heavy metals for the site. The 95% UCL calculations sheets are presented in Table 6 and Table 7.
- Titanium and zirconium were tested in 3 shallow soil samples (0-0.1m bgl) where suspected black sands/ mineral sands were noted: the results indicate that titanium concentrations are generally elevated (>250 mg/kg) in shallow soils of AM-BH15, AM-BH16 and AM-BH29 along the east portion of the time, while zirconium is reported at low levels at the locations (<3 mg/kg). This suggests that residual amounts of either rutile or ilmenite (or both) may be present and mixed in with the surface soil. There are no assessment criteria for these analytes (see also Section 6.6).

[3] EILs have been calculated using conservative values for CEC, as no analysis for site specific parameters were completed, and a pH of 4, as per the most conservative result of ASS analysis for shallow soils.

- Concentrations of TRH, BTEX, PAH and OCP were below the respective LORs in the samples (except for TRH F3 in AM-BH20 at 0.25-0.5 m, reported at 120 mg/kg). Concentrations in the samples were below the adopted guidelines for human health and environment assessment.

Table 3: Soil laboratory analysis PFAS

			Per- and polyfluoroalkyl substances (PFAS)																															
			Perfluorodecane sulfonic acid (PFDS)	N-Methyl PFO sulfonamidoethanol (MeFOSE)	N-methyl-PFO sulfonamidoacetic acid (MeFOSAA)	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS (lab reported)	PFAS (Sum of total - Lab Reported)	Sum of PFAS (Swedish 11 + 8:2FTSA, lab reported)	Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecanoic acid (PFDA)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorobutane sulfonic acid (PFBS)	Ammonium perfluorodecane sulfonate (NH4-PFDS)	4:2 Fluorotelomer sulfonic acid (4:2 FTSA)	6:2 Fluorotelomer sulfonic acid (6:2 FTSA)	8:2 Fluorotelomer sulfonic acid (8:2 FTSA)	10:2 Fluorotelomer sulfonic acid (10:2 FTSA)	N-Ethyl PFO sulfonamide (EtFOSA)	N-Ethyl PFO sulfonamidoethanol (EtFOSE)	N-Methyl PFO sulfonamide (MeFOSA)	Perfluorooctane sulfonamide (FOSA)	N-ethyl-PFO sulfonamidoacetic acid (EtFOSAA)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002
NEMP [1] 2018 Ecological-Interim sol-ecological indirect exposure-Ind/comm						**0.14**																												
NEMP 2018 Human Health (Commercial/Industrial)						50			20																									
Field ID	**Sampled Date**	**Lab Report Number**																																
AM-BH01 0.00-0.50	16-Dec-15	EB1538408	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH01 2.50-3.00	16-Dec-15	EB1538408	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH02 0.00-0.50	16-Dec-15	EB1538408	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH02 1.00-1.50	16-Dec-15	EB1538408	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH03 0.00-0.50	16-Dec-15	EB1538408	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH03 1.00-1.50	16-Dec-15	EB1538408	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH04 0.00-0.50	16-Dec-15	EB1538408	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH04 0.50-1.00	16-Dec-15	EB1538408	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH05 0.50-1.00	16-Dec-15	EB1538415	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH05 2.50-3.00	16-Dec-15	EB1538415	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH06 0.50-1.00	16-Dec-15	EB1538415	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH06 2.50-3.00	16-Dec-15	EB1538415	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH07 0.00-0.50	16-Dec-15	EB1538415	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH07 1.50-2.00	16-Dec-15	EB1538415	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH08 0.00-0.50	16-Dec-15	EB1538415	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH08 1.00-1.50	16-Dec-15	EB1538415	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH09 0.00-0.50	17-Dec-15	EB1538419	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH09 0.50-1.00	17-Dec-15	EB1538419	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH10 0.25-0.5	06-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH10 1.75-2	06-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH13 0.25-0.5	06-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH13 2.75-3	06-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH14 0.25-0.5	06-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	0.0003	<0.0002	0.0003	0.0003	0.0003	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH14 0.75-1	06-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH15 0.25-0.5	07-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH15 1.75-2	07-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH16 0.25-0.5	07-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH16 2.75-3	07-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH17 0.00-0.50	18-Dec-15	EB1538419	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH17 1.00-1.50	18-Dec-15	EB1538419	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH18 0.25-0.5	06-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH18 1.75-2	06-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH19 0.00-0.50	17-Dec-15	EB1538419	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH19 1.50-2.00	17-Dec-15	EB1538419	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH24 0.25-0.5	06-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH24 2.75-3	06-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH25 0.25-0.5	07-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	0.002	0.0005	0.0025	0.0025	0.0025	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH25 2.75-3	07-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH26 0.25-0.5	06-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH26 2.75-3	06-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH28 0.00-0.50	18-Dec-15	EB1538419	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH28 2.50-3.00	18-Dec-15	EB1538419	<0.0002	<0.001	-	<0.0005	<0.0005	<0.0002	<0.0005	-	-	-	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	-	-	<0.005	<0.001	-	<0.001	<0.001	<0.001	<0.0002	-
AM-BH29 0.25-0.5	07-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH29 1.75-2	07-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH30 0.25-0.5	10-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH30 0.75-1	10-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH31 0.25-0.5	10-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH31 1.75-2	10-Oct-16	EB1624749	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH32 0.25-0.5	10-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
AM-BH32 2.75-3	10-Oct-16	EB1624693	<0.0002	<0.0005	<0.0002	<0.0002	0.0002	<0.0002	0.0002	0.0002	0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002

Notes:
[1] NEMP = PFAS National Environmental Management Plan January 2018

Table 4: Soil laboratory analysis heavy metals and pesticides

							Location Code	AM-BH10	AM-BH13	AM-BH14	AM-BH15	AM-BH15	AM-BH16	AM-BH16	AM-BH18	AM-BH21 0.50-1.00	AM-BH22 1.00-1.50	AM-BH23 0.50-1.00	AM-BH24	AM-BH25	AM-BH25	AM-BH26	AM-BH29	AM-BH29	AM-BH30	AM-BH31	AM-BH32
							Depth	0.25-0.5	0.25-0.5	0.25-0.5	0.0-0.1	0.25-0.5	0.0-0.1	0.25-0.5	0.25-0.5	0.5-1.0	1.0-1.5	0.5-1.0	0.25-0.5	0.25-0.5	0.5-0.6	0.25-0.5	0.25-0.5	0.0-0.1	0.25-0.5	0.25-0.5	0.25-0.5
							Sampled Date	6/10/2016	6/10/2016	6/10/2016	7/10/2016	7/10/2016	7/10/2016	7/10/2016	6/10/2016	17/12/2015	17/12/2015	17/12/2015	6/10/2016	7/10/2016	7/10/2016	6/10/2016	7/10/2016	7/10/2016	10/10/2016	10/10/2016	10/10/2016
Chem Group	ChemName	output unit	EQL	NEPM[1] 2013 EILS-Commercial and industrial	NEPM 2013 HIL-Commercial/ Industrial D Soil	AEPR[2] 1997 - General Areas of Airports	Lab Report Number	EB1624693	EB1624749	EB1624749	EB1624749	EB1624749	EB1624749	EB1624749	EB1624693	EB1538419	EB1538419	EB1538419	EB1624693	EB1624749	EB1624749	EB1624693	EB1624693	EB1624693	EB1624749	EB1624749	EB1624693
Heavy Metals	Arsenic	mg/kg	5	160	3000	500		33	7	8	8	14	11	<5	14	11	20	14	<5	10	-	<5	8	7	8	19	14
	Cadmium	mg/kg	1		900	100		<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1	<1
	Chromium	mg/kg	2	310		60,000		49	9	21	46	41	37	55	65	54	58	30	214	54	-	211	51	42	39	41	65
	Copper	mg/kg	5	85	240000	5000		31	23	24	34	22	25	20	15	12	19	8	80	41	-	70	19	17	16	20	18
	Lead	mg/kg	5	1800	1500	1500		60	14	13	10	10	17	6	10	7	42	13	<5	15	-	<5	9	9	12	13	12
	Mercury	mg/kg	0.1		730	75		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel	mg/kg	2	55	6000	3000		33	9	14	52	39	18	18	18	7	14	6	82	31	-	82	38	27	24	41	16
	Titanium	mg/kg	10					-	-	-	360	-	340	-	-	-	-	-	-	-	-	-	-	250	-	-	-
	Zinc	mg/kg	5	110	400000	35,000		242	30	40	56	90	65	33	61	25	35	24	38	44	-	32	47	41	54	63	44
	Zirconium	mg/kg	0.5					-	-	-	1.4	-	3	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-
OCP	a-BHC	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Aldrin	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Aldrin & Dieldrin (Sum of total) (Lab Reported)	mg/kg	0.05		45			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-	-	-	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	b-BHC	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Chlordane (Sum of total)	mg/kg	0.05		530			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-	-	-	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	cis-Chlordane	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	trans-Chlordane	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	d-BHC	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	DDD	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	DDE	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	DDT	mg/kg	0.2	640				<0.2	<0.2	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	<0.2	<0.2	<0.2
	DDT+DDE+DDD (Sum of total) (Lab Reported)	mg/kg	0.05		3600			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-	-	-	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Dieldrin	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Endosulfan	mg/kg	0.05		2000			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-	-	-	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Endosulfan I	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Endosulfan II	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Endosulfan sulphate	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Endrin	mg/kg	0.05		100			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Endrin aldehyde	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Endrin ketone	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	g-BHC	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Heptachlor	mg/kg	0.05		50			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Heptachlor epoxide	mg/kg	0.05					<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
	Methoxychlor	mg/kg	0.2		2500			<0.2	<0.2	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	<0.2	<0.2	<0.2
Halogenated Benzenes	Hexachlorobenzene	mg/kg	0.05		80			<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
OPP	Azinphos-methyl	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bromophos-ethyl	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Carbophenothion	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorfenvinphos	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorpyriphos	mg/kg	0.05		2000			-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorpyriphos-methyl	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Diazinon	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Dichlorvos	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Dimethoate	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ethion	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fenamiphos	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fenthion	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Malathion	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion-methyl	mg/kg	0.2					-	-	-	-	<0.2	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
	Monocrotophos	mg/kg	0.2					-	-	-	-	<0.2	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	mg/kg	0.2					-	-	-	-	<0.2	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pirimphos-ethyl	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
	Prothiofos	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
Pesticides-Others	Demeton-s-methyl	mg/kg	0.05					-	-	-	-	<0.05	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-

1 National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in 2013 (NEPM).
2 AEPR is defined as Airports (Environmental Protection) Regulations
***EILs criteria for aged contaminants in soil have been selected based on the soil physical properties of pH 4 as per the most conservative result of ASS analysis of shallow soils. In addition the EILs have been calculated using conservative values for soil physical properties of CEC and TOC.

Table 5: Soil laboratory analysis TRH, BTEX and PAH

										Location Code	AM-BH30	AM-BH31	AM-BH32	AM-BH10	AM-BH13	AM-BH14	AM-BH15	AM-BH16	AM-BH18	AM-BH21 0.50-1.00	AM-BH22 1.00-1.50	AM-BH23 0.50-1.00	AM-BH24	AM-BH25	AM-BH25	AM-BH26	AM-BH29
										Depth	0.25-0.5	0.25-0.5	0.25-0.5	0.25-0.5	0.25-0.5	0.25-0.5	0.25-0.5	0.25-0.5	0.25-0.5	0.5-1.0	1.0-1.5	0.5-1.0	0.25-0.5	0.25-0.5	0.5-0.6	0.25-0.5	0.25-0.5
				NEPM 2013 Commercial/ Industrial D, Sand Soil HSL for Vapour Intrusion		NEPM 2013 EILs- Commercial and industrial	NEPM 2013 ESLs- Commercial and industrial, Coarse Soil	NEPM 2013 HIL- Commercial/ Industrial D Soil	AEPR[2] 1997 - General Areas of Airports	Sampled Date	10/10/2016	10/10/2016	10/10/2016	6/10/2016	6/10/2016	6/10/2016	7/10/2016	7/10/2016	6/10/2016	17/12/2015	17/12/2015	17/12/2015	6/10/2016	7/10/2016	7/10/2016	6/10/2016	7/10/2016
Chem Group	ChemName	output unit	EQL	0-1m	1-2m					Lab Report Number	EB1624749	EB1624749	EB1624693	EB1624693	EB1624749	EB1624749	EB1624749	EB1624749	EB1624693	EB1538419	EB1538419	EB1538419	EB1624693	EB1624749	EB1624749	EB1624693	EB1624693
BTEX	Benzene	mg/kg	0.2	3	3		75				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2
	Toluene	mg/kg	0.5	NL	NL		135				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
	Ethylbenzene	mg/kg	0.5	NL	NL		165				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
	Xylenes (m & p)	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
	Xylene (o)	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
	Xylenes (Sum of total) (Lab Reported)	mg/kg	0.5	260	370		180				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
	Total BTEX	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2
PAH	Acenaphthene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Acenaphthylene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Anthracene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benz(a)anthracene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzo(a)pyrene	mg/kg	0.5				1.4		5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzo(a)pyrene TEQ (lower bound)*	mg/kg	0.5					40			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzo(a)pyrene TEQ (medium bound)*	mg/kg	0.5					40			0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Benzo(a)pyrene TEQ (upper bound)*	mg/kg	0.5					40			1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Benzo(b)&(j)fluoranthene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzo(g,h,i)perylene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzo(k)fluoranthene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chrysene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dibenz(a,h)anthracene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fluoranthene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fluorene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Naphthalene	mg/kg	0.5	NL	NL	370					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Phenanthrene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Pyrene	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	PAH (Sum of Common 16 PAHs - Lab Reported)	mg/kg	0.5					4000	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TRH	TRH C6 - C10 Fraction F1	mg/kg	10								<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10
	TRH C6 - C10 Fraction Less BTEX F1	mg/kg	10	260	370		215		800		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10
	TRH >C10 - C16 Fraction F2	mg/kg	50								-	-	-	-	-	-	<50	<50	-	-	-	-	-	-	-	-	-
	TRH >C10 - C12 Fraction Less Naphthalene F2	mg/kg	50				170		500		-	-	-	-	-	-	<50	<50	-	-	-	-	-	-	-	-	-
	TRH >C16 - C34 Fraction F3	mg/kg	100				1700		500		-	-	-	-	-	-	<100	<100	-	-	-	-	-	-	-	-	-
	TRH >C34 - C40 Fraction F4	mg/kg	100				3300				-	-	-	-	-	-	<100	<100	-	-	-	-	-	-	-	-	-

1 National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in 2013 (NEPM).
2 AEPR is defined as Airports (Environmental Protection) Regulations

Table 6: 95% Upper Confidence Level Average Calculation for Zinc

Parameter	*Normal Distribution*	*Lognormal Distribution*	*Recommended Distribution*	*Units*
Analyte threshold	45	45	**45**	mg/kg
$UCL_{average}$	87.98	82.66	**87.98**	mg/kg
No. of samples	14	14	**14**	
Mean	62.36	52.03	**62.36**	mg/kg
Estimated Mean	62.36	60.83	**62.36**	mg/kg
Standard deviation	54.14	1.71	**54.14**	mg/kg
Distribution	-	-	**normal**	

Distribution Test Summary Using Coeffiecient Of Variation
Distribution test result - normal

The statistical analysis indicates that there is a 95% probability
that the arithmetic average concentration of the contamination
will not exceed 87.9825 mg/kg

Data Entered By: Serena Curti

Date: 14/11/2016

Checked By: Andrew Howes

Date: 15/11/2016

References: VIC EPA, *Industrial Waste Resource Guidelines - Soil Sampling, June 2009*
Gilbert, R.O., 1987, *Statistical Methods For Environmental Pollution Monitoring*,
Van Nostrand Reinhold, New York

Note: Where the laboratory reported a result below the method detection limit, a value equal to half the detection limit was substituted for the purposes of statistical calculation.
Gilbert (1987) also indicates that this is common practice on pages 177 to 178 of the text.

Table 7: 95% Upper Confidence Level Average Calculation for Nickel

Parameter	*Normal Distribution*	*Lognormal Distribution*	*Recommended Distribution*	*Units*
Analyte threshold	45	45	**45**	mg/kg
$UCL_{average}$	45.56	52.47	**45.56**	mg/kg
No. of samples	14	14	**14**	
Mean	34.64	28.66	**34.64**	mg/kg
Estimated Mean	34.64	35.37	**34.64**	mg/kg
Standard deviation	23.07	1.89	**23.07**	mg/kg
Distribution	-	-	**normal**	

Distribution Test Summary Using Coeffiecient Of Variation
Distribution test result - normal

The statistical analysis indicates that there is a 95% probability
that the arithmetic average concentration of the contamination
will not exceed 45.5622 mg/kg

Data Entered By: Serena Curti

Date: 14/11/2016

Checked By: Andrew Howes

Date: 15/11/2016

References: VIC EPA, *Industrial Waste Resource Guidelines - Soil Sampling, June 2009*
Gilbert, R.O., 1987, *Statistical Methods For Environmental Pollution Monitoring*,
Van Nostrand Reinhold, New York

Note: Where the laboratory reported a result below the method detection limit, a value equal to half the detection limit was substituted for the purposes of statistical calculation.
Gilbert (1987) also indicates that this is common practice on pages 177 to 178 of the text.

6.4 Groundwater Analysis

6.4.1 Contamination Investigation

Assessment of groundwater contamination was undertaken by Golder for PFAS and metals by Golder in January 2016 (Golder 2017a and Golder 2017b). Some additional monitoring was undertaken in October 2016. Sampling was undertaken from 10 installed wells and 5 existing groundwater monitoring wells. The vertical extent of the groundwater monitoring wells was generally 3 m bgl and were considered suitable for targeting the shallow unconfined aquifer that is within 0.6 to 2 m of the ground surface. The groundwater wells were suitably located across the site and at the perimeter to access the potential contamination sources.

The groundwater analytical results, including comparisons with the relevant assessment guidelines are presented in **Table 8**: PFAS and **Table 9**: Heavy metals below. The PFAS assessment guidelines have been updated to NEMP 2018. Key analytical results from the investigation are as follows:

- PFAS was reported above the laboratory LOR at three of the ten monitoring wells sampled in January 2016. In the October 2016 monitoring event 8 of the 9 groundwater monitoring wells were sampled. PFAS concentrations were below the adopted assessment guidelines for freshwater/interim marine water 95% species protection and human health recreational water. Concentrations of PFOS+ PFHxS have been reported above the assessment guidelines for human health drinking water at groundwater monitoring wells AM-MW14 and AM-MW16 sampled in October 2016.
- Heavy metals exceedances of the AEPR Marine Waters guideline and NEPM 2013 Marine Waters GILs are noted for nickel and zinc in five monitoring wells sampled at the site (AM-MW10, AM-MW14, AM-MW15, AM-MW16 and MW-31).
- Nickel concentrations exceeded the NEPM 2013 Drinking Water GILs in three groundwater monitoring wells (AM-14, AM-MW16 and MW-31).

Table 8: Groundwater laboratory analysis PFAS

			Per- and polyfluoroalkyl substances (PFAS)																													
			Perfluorodecane sulfonic acid (PFDS)	N-Methyl PFO sulfonamidoethanol (MeFOSE)	N-methyl-PFO sulfonamidoacetic acid (MeFOSAA)	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS (lab reported)	PFAS (Sum of total - Lab Reported)	Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecanoic acid (PFDA)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorobutane sulfonic acid (PFBS)	4:2 Fluorotelomer sulfonic acid (4:2 FTSA)	6:2 Fluorotelomer sulfonic acid (6:2 FTSA)	8:2 Fluorotelomer sulfonic acid (8:2 FTSA)	10:2 Fluorotelomer sulfonic acid (10:2 FTSA)	N-Ethyl PFO sulfonamide (EtFOSA)	N-Ethyl PFO sulfonamidoethanol (EtFOSE)	N-Methyl PFO sulfonamide (MeFOSA)	Perfluorooctane sulfonamide (FOSA)	N-ethyl-PFO sulfonamidoacetic acid (EtFOSAA)
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.002	0.005	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.002	0.002
NEMP[1] 2018 Health-based guidance values drinking water						***0.56***			***0.07***																							
NEMP[1] 2018 Health-based guidance values recreational water						5.6			0.7																							
NEMP 2018 Marine 95% Protection						220	0.13																									
Field_ID	**DATE**	**Lab Report Number**																														
AM-BH01	2016-01-04	EB1600085	<0.005	<0.1	-	<0.002	<0.002	<0.002	<0.002	-	-	<0.002	<0.002	<0.002	-	<0.002	<0.05	<0.005	<0.005	<0.005	-	-	<0.002	-	<0.01	<0.01	-	<0.005	<0.1	<0.05	<0.002	-
AM-BH04	2016-01-04	EB1600085	<0.005	<0.1	-	<0.002	<0.002	<0.002	<0.002	-	-	<0.002	<0.002	<0.002	-	<0.002	<0.05	<0.005	<0.005	<0.005	-	-	<0.002	-	<0.01	<0.01	-	<0.005	<0.1	<0.05	<0.002	-
AM-BH08	2016-01-04	EB1600085	<0.005	<0.1	-	<0.002	<0.002	<0.002	<0.002	-	-	0.009	<0.002	<0.002	-	<0.002	<0.05	<0.005	<0.005	<0.005	-	-	0.004	-	<0.01	<0.01	-	<0.005	<0.1	<0.05	<0.002	-
AM-BH08	2016-10-25	EB1625464	<0.002	<0.005	<0.002	<0.002	<0.002	0.007	0.007	0.022	<0.01	0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	0.005	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
AM-BH19	2016-01-04	EB1600085	<0.005	<0.1	-	<0.002	<0.002	0.003	0.003	-	-	0.005	<0.002	<0.002	-	<0.002	<0.05	<0.005	<0.005	<0.005	-	-	0.004	-	<0.01	<0.01	-	<0.005	<0.1	<0.05	<0.002	-
AM-BH19	2016-10-25	EB1625464	<0.002	<0.005	<0.002	<0.002	<0.002	0.012	0.012	0.02	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	0.003	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
AM-BH28	2016-01-04	EB1600085	<0.005	<0.1	-	<0.002	<0.002	<0.002	<0.002	-	-	<0.002	<0.002	<0.002	-	<0.002	<0.05	<0.005	<0.005	<0.005	-	-	<0.002	-	<0.01	<0.01	-	<0.005	<0.1	<0.05	<0.002	-
AM-MW10	2016-10-25	EB1625464	<0.002	<0.005	<0.002	0.004	0.004	0.062	0.066	0.087	<0.01	0.003	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	0.008	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
AM-MW14	2016-10-25	EB1625464	<0.002	<0.005	<0.002	0.003	0.011	0.394	***0.405***	0.686	<0.01	0.019	<0.002	<0.002	0.004	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	0.084	0.171	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
AM-MW15	2016-10-25	EB1625464	<0.002	<0.005	<0.002	<0.002	<0.002	0.054	0.054	0.071	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	0.006	0.011	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
AM-MW16	2016-10-25	EB1625464	<0.002	<0.005	<0.002	0.016	0.021	0.293	***0.314***	0.431	<0.01	0.023	0.005	<0.002	0.005	<0.002	<0.005	<0.002	<0.002	<0.002	0.002	0.029	0.037	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
AM-MW31	2016-10-25	EB1625464	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
BAC-MW07	2016-01-04	EB1600085	<0.005	<0.1	-	<0.002	<0.002	<0.002	<0.002	-	-	<0.002	<0.002	<0.002	-	<0.002	<0.05	<0.005	<0.005	<0.005	-	-	<0.002	-	0.03	<0.01	-	<0.005	<0.1	<0.05	<0.002	-
BAC-MW24	2016-01-04	EB1600085	<0.005	<0.1	-	<0.002	<0.002	<0.002	<0.002	-	-	<0.002	<0.002	<0.002	-	<0.002	<0.05	<0.005	<0.005	<0.005	-	-	<0.002	-	<0.01	<0.01	-	<0.005	<0.1	<0.05	<0.002	-
BIP/MW1	2016-01-04	EB1600085	<0.005	<0.1	-	<0.002	<0.002	<0.002	<0.002	-	-	0.007	<0.002	<0.002	-	<0.002	<0.05	<0.005	<0.005	<0.005	-	-	0.006	-	<0.01	<0.01	-	<0.005	<0.1	<0.05	<0.002	-
BIP-MW1	2016-10-25	EB1625464	<0.002	<0.005	<0.002	<0.002	<0.002	0.011	0.011	0.033	<0.01	0.006	<0.002	<0.002	0.004	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	0.004	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
BIP/MW2	2016-01-04	EB1600085	<0.005	<0.1	-	<0.002	<0.002	<0.002	<0.002	-	-	<0.002	<0.002	<0.002	-	<0.002	<0.05	<0.005	<0.005	<0.005	-	-	0.002	-	<0.01	<0.01	-	<0.005	<0.1	<0.05	<0.002	-
BIP-MW2	2016-10-25	EB1625464	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
BIP-MW07	2016-10-25	EB1625464	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
BP/MW6	2016-01-04	EB1600085	<0.005	<0.1	-	<0.002	<0.002	<0.002	<0.002	-	-	<0.002	<0.002	<0.002	-	<0.002	<0.05	<0.005	<0.005	<0.005	-	-	<0.002	-	<0.01	<0.01	-	<0.005	<0.1	<0.05	<0.002	-

Notes:

[1] NEMP is defined as the PFAS National Environmental Management Plan 2018

Table 9: Groundwater laboratory analysis for heavy metals

			Heavy Metals							
			Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Zinc (Filtered)
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
EQL			1	0.1	1	1	1	0.1	1	5
NEPM[1] 2013 GILs[2], Recreational			**100**	**20**	**500***	**20,000**	**100**	**10**	**200**	
NEPM 2013 GILs, Drinking Water			***10***	***2***	***50****	***2,000***	***10***	***1***	***20***	
NEPM 2013 GILs, Marine Waters				*0.7*	*27*	*1.3*	*4.4*	*0.1*	*7*	*15*
AEPR 1997 - Marine Waters			50	2	50	5	5	0.1	15	50
Field_ID	**Sampled Date**	**Lab Report Number**								
AM-MW10	25/10/2016	EB1625464	<5	<0.5	<5	<5	<5	<0.1	*18*	*134*
AM-MW14	25/10/2016	EB1625464	<5	<0.5	<5	<5	<5	<0.1	***74***	*194*
AM-MW15	25/10/2016	EB1625464	1	<0.1	<1	<1	<1	<0.1	*18*	*76*
AM-MW16	25/10/2016	EB1625464	4	<0.1	<1	<1	<1	<0.1	***32***	*118*
AM-MW31	25/10/2016	EB1625464	<5	<0.5	<5	<5	<5	<0.1	***24***	*118*

Notes:
1. NEPM is defined as National Environmental Protection (Assessment of Site Contamination) Measure
2. GIL is defined as Groundwater Investigation Levels
3. AEPR is defined as Airports (Environmental Protection) Regulations
* Guideline for Chromium VI adopted for GILs

6.4.2 Construction Monitoring

PSK has undertaken groundwater monitoring for PFAS (the Total Oxidisable Precursor Assay (TOPA) method) and metals monthly from December 2017 to November 2018, although results have not been reproduced in this document. The groundwater monitoring was undertaken from 15 monitoring wells spaced generally evenly around the site perimeter. Review of these monitoring results indicated the following:

- PFAS concentrations were reported above the laboratory LOR in the 15 monitoring wells sampled over the monitoring period. The PFAS concentrations were below the adopted assessment guidelines for freshwater/interim marine water 95% species protection and human health recreational water. Groundwater monitoring well MW1B located at the northern end of the site sampled in June 2018 had concentrations of PFOS+ PFHxS reported above the assessment guidelines for human health drinking water (workers exposure). For the remaining samples of groundwater, the concentrations of PFAS were below the assessment guidelines for human health drinking water. Further discussion on PFAS in receiving waters is provided in Section 6.5.
- Heavy metal exceedance were as follows:
  - Repeated exceedances of the AEPR Marine Waters guideline and NEPM 2013 Marine Waters GILs were encountered for nickel and zinc across the 15 groundwater monitoring wells.
  - Exceedances of AEPR Marine Waters guideline for chromium at MW1F and MW1B.
  - Cadmium concentrations exceeded NEPM 2013 Marine Waters GILs at 3 wells (MW1B, MW1E and MW1G). Cadmium concentrations at MW1E also exceeded the AEPR Marine Waters guideline.
  - Copper concentrations exceeded NEPM 2013 Marine Waters GILs at 6 monitoring wells (MW1A, MW1B, MW1D, MW1E, MW1F and MW1G). Copper concentrations at 3 monitoring wells (MW1E, MW1F and MW1G) also exceeded the AEPR Marine Waters guideline.
  - Nickel concentrations exceeded NEPM 2013 Drinking Waters GILs for some monitoring events for 11 wells (MW1A, MW1B, MW1E, MW1F, MW1G, MW1H, MW2A, MW1C, MW3D and MW2B, MW2C).

Despite some exceedances of metals in the groundwater, the criteria are relevant to the point of discharge. Further discussion of metals in receiving surface waters is provided in Section 6.6.

6.5 Receiving Surface Water Monitoring for PFAS

PSK collected surface water samples from areas outside of the drains (ie, in the receiving water disconnected from, and outside of, the water collected from site. These locations are subject to tidal influences and are considered to be representative of surface water which will reach Kedron Brook. Results are summarised in Table 10 and the locations are provided in the site plan in **Attachment A**.

Several PFAS chemicals, such as PFOS, PFHxS and PFOA are present at concentrations above the laboratory LOR. It is considered that the PFAS present in these locations (being disconnected from the water from the site drains), represents diffuse ambient concentrations in the surrounding waterways. Conversely, the PFAS concentrations are relatively low compared to water guidelines presented in the PFAS NEMP which is consistent with the primary sources of PFAS from firefighting facilities at significant distances from the Auto Mall site. The closest known source of PFAS within the airport is the Joint User Hydrant Installation (JUHI) at Hakea Street (620 m away) and which is in a separate stormwater and drainage catchment, and which flows into Boggy Creek then the Brisbane River.

The source areas on the CSR are lower in the catchment than the Auto Mall site and for this reason they are unlikely to be directly affecting the PFAS levels in the surrounding surface water channels, except possibly from significant tidal events. The airport precinct is surrounded by upstream industrial process and wastewater

discharges, providing numerous external sources which may be contributing to the background concentrations of PFAS observed within the tidal channels.

Table 10: Receiving Surface Water Monitoring Results for PFAS

			Per- and polyfluoroalkyl substances (PFAS)																														
			Perfluorodecane sulfonic acid (PFDS)	N-Methyl PFO sulfonamidoethanol (MeFOSE)	N-methyl-PFO sulfonamidoacetic acid (MeFOSAA)	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS (lab reported)	PFAS (Sum of total - Lab Reported)	Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecanoic acid (PFDA)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorobutane sulfonic acid (PFBS)	4:2 Fluorotelomer sulfonic acid (4:2 FTSA)	6:2 Fluorotelomer sulfonic acid (6:2 FTSA)	8:2 Fluorotelomer sulfonic acid (8:2 FTSA)	10:2 Fluorotelomer sulfonic acid (10:2 FTSA)	N-Ethyl PFO sulfonamide (EtFOSA)	N-Ethyl PFO sulfonamidoethanol (EtFOSE)	N-Methyl PFO sulfonamide (MeFOSA)	Perfluorooctane sulfonamide (FOSA)	N-ethyl-PFO sulfonamidoacetic acid (EtFOSAA)
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			0.002	0.005	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.002	0.002
NEMP[1] 2018 Health-based guidance values drinking water						***0.56***			***0.07***																								
NEMP[1] 2018 Health-based guidance values recreational water						5.6			0.7																								
NEMP 2018 Marine 95% Protection						220	0.13																										
Field_ID	**DATEONLY**	**Lab_Report_Number**																															
SW7	6/02/2019	EB1902986	<0.002	<0.005	<0.002	0.004	0.004	0.003	0.007	0.027	<0.01	0.008	0.003	<0.002	0.005	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.002
SW12	6/02/2019	EB1902986	<0.002	<0.005	<0.002	0.005	0.011	0.006	0.017	0.081	0.03	0.011	0.004	<0.002	0.012	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.002
SW14	6/02/2019	EB1902986	<0.002	<0.005	<0.002	0.004	0.004	0.009	0.013	0.116	0.06	0.014	0.005	<0.002	0.017	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.002

Notes:

[1] NEMP is defined as the PFAS National Environmental Management Plan 2018

6.6 Receiving Surface Water Monitoring for Metals

PSK collected surface water samples from the drains and the areas outside of the drains (ie, in the receiving water bodies disconnected from, and outside of, the water collected from site. These locations are subject to tidal influences and are considered to be representative of surface water which will reach Kedron Brook. Results of receiving water quality before significant rain (January 2019) and after significant rain (February 2019) are summarised in **Attachment B** along with Tables A1 and A2 from PSK report providing the remaining drain data. The sampling locations are provided in **Attachment A**.

It is noted that in some areas of the internal drains (sample locations SW9 and SW10) concentrations of 6 out of 8 (total) metals exceeded the WQOs based on the published guidelines or deviations from baseline concentrations. This appears to be associated with low pH. A procedure for increasing the pH with lime treatment is available in the ASS MP. The purpose is to adjust pH and also precipitate metals. The procedure is followed prior to release of waters from those portions of the drain. In the remaining drains, the data indicates that only iron exceeds background concentrations in some drains and copper at SW13.

Sample locations SW7 and SW12 represent receiving waters up until January 2019 and, from February 2019, SW14 in the south has been included. During a recent scheduled monitoring event (23 January 2019), after a period of unseasonably low rainfall, water quality was acceptable in SW7 and SW12, except that iron concentrations were higher than the WQOs. In contrast, during the day of significant rainfall on 6 February 2019, a special round of sampling was completed. Only iron in SW7 exceeded WQOs at a similar concentration to the January round. Iron concentrations in SW12 decreased and iron in SW14 was similar to SW.

The concentrations of iron and other metals are at higher concentrations in the on-site drains. Despite some impacts contained within these drains and their isolation from drains outside of the site, the trends indicate that the site is not impacting the receiving water.

6.7 Mineral Sands

It is understood that mineral sands may have been placed on site in the past. Anomalous material has been observed at the site that was consistent with mineral sands during previous site activities. This is documented as BAC CSR Site 28. The soil investigation of the site by Golder in 2016 analysed three shallow soils along the eastern portion of the site which contained elevated concentrations of titanium. The concentrations are related to the historical placement of mineral sands and suggests that residual amounts of either rutile or ilmenite (or both) may be present and mixed in with the surface soil. Further chemical analysis of surface samples in 2017 and 2018 confirmed that the material suspected to be minerals sands is ilmenite.

In 2018 Golder reported an assessment summary of this material. It was concluded that the material is a mineral sand and is ilmenite. The exposure levels (in µSv/hr) measured by Radiation & Nuclear Sciences in the area shown on Plate 1 are consistent with typical background levels. The mineral sand content and emission dosage are significantly below published NORMs guidelines. Titanium and zirconium which are heavy metals associated with mineral sand, as well as the radiological products are less likely to be leachable (mobile) as they are part of the crystalline structure of the minerals. Leaching of radioisotope from the material to groundwater will be consistent with typical background soils of which the NORMs are comparable. Based on this information, the mineral sand material (and its entrained radio-isotopic components) will not cause harm to aquatic ecological receptors, to site workers or the future site users of the Auto Mall, from radioactivity.

Plate 1: Location of mineral sands and monitoring locations (Radiation and Nuclear Sciences, October 2018)

6.8 Discussion

As discussed in Section 6.3, the spatial density of soil investigations was considered sufficient given site access was limited and there was coverage of potential contamination sources. Groundwater investigations were considered appropriate. No additional contaminations assessments of soil and groundwater is considered to be required.

Review of previous assessments for contamination provides the following information:

- Low levels of PFAS were reported at three near-surface locations and one location at depth of 3 m bgl. The concentrations were below the human health and ecological assessment guidelines adopted for this site.
- Concentrations of other potential contaminants of concern in soil samples analysed were below the human health and ecological assessment guidelines adopted for this site.
- Low levels of PFAS were also reported in groundwater samples. The concentrations were below the recreational human health and ecological assessment guidelines adopted for this site. There has been three monitoring well results where PFOS+ PFHxS concentrations were above the assessment guidelines for human health drinking water.
- Although leachability testing was not undertaken in soil samples at the time, only 3 soil samples out of 52 had PFAS concentrations above LOR. In two cases, deeper samples had concentrations less than LOR indicating a propensity for low leachability and hence a low risk to groundwater. However, two wells were impacted with (only) PFOS, one of which was in the soil bore containing PFAS that was converted to a well. In both wells, the concentrations in the groundwater were below the key criteria for protection of recreational users and ecological receptors, indicating that the groundwater is not significantly impacted, even if as a result of the limited levels of leaching which may be occurring. This is consistent with the 1 year period of PFAS testing of wells surrounding the site by PSK. PSK's testing showed only well, MW1B (Stage 1, north - and not near where the areas with PFAS in soil), had concentrations exceeding the drinking water guidelines, and the groundwater quality in the 15 wells present on site (including MW1B) was suitable for recreational use and exposure by ecological receptors (95% species protection).
- Titanium concentrations appear elevated in shallow soil along the eastern portion of the site (CSR site 28), possibly relating to the historical placement of mineral sands. Assessment of the material for NORMs were considered be consistent with typical background levels and would not result in additional impact to groundwater underlying the site for either titanium or radioisotope levels.
- Heavy metal concentrations in groundwater have exceeded the human health guidelines for drinking water and ecological receptor guidelines adopted for this site.
- Concentrations of PFAS in surface water bodies outside of the site, disconnected from the internal drains, were above LOR. These concentrations are considered to potentially represent the surrounding ambient concentration in water influenced by tidal effects.

7.0 CONCEPTUAL SITE MODEL

7.1 Developing the Conceptual Site Model (CSM)

In accordance with Schedule B1 of the NEPM 2013, a CSM has been developed for the site to assess identified contamination in relation to the current condition and possible disturbances of soil and groundwater during construction works and possible reuse of excavated materials. The essential elements of the CSM have been identified in the guidelines as the following:

- Known and potential sources of contamination and contaminants of concern including the mechanism(s) of contamination, as a result of future disturbance works (i.e. nature of the source release into the environment).
- Potentially affected media: this project focuses on soil and groundwater as the affected media; other media were not tested as part of this investigation.
- Human and ecological receptors.
- Potential and complete exposure pathways.

The above elements have been addressed in the following sections.

7.2 Sources of Contamination

Active or historical primary sources of PFAS were not identified at the site. Low level and diffuse PFAS impacts were present in soils (below assessment guidelines for the human health and ecological receptor protection) and groundwater (above drinking water and interim marine water guidelines for 95% species protection). These may be related to historical use of AFFF elsewhere at the main airport precinct, although known sources of PFAS relative to the Auto Mall site are within separate catchment and generally drain east to Boggy Creek. Other sources of PFAS within the tidal channels will include upstream industrial process and wastewater discharges.

The source of heavy metal concentrations in groundwater which are above NEPM 2013 Drinking Water GILs (nickel), AEPR Marine Waters guideline (nickel, zinc, cadmium and copper) and NEPM 2013 Marine Waters GILs (nickel, zinc, cadmium, copper and chromium) may be related to leaching from historically placed fills or reflect natural levels in this area.

Titanium concentrations also appear elevated in shallow soil along the eastern portion of the site, possibly relating to the historical placement of inert mineral sands. Titanium in the mineral sands has low mobility and is considered not to pose a risk to terrestrial or aquatic ecosystems. NORMs associated with these minerals were at concentrations consistent with background and therefore were not considered further.

7.3 Contaminants of Interest

The results of the investigation (Section 3.0) identified the following key COPCs:

- Low level PFAS in disturbed soils
- Heavy metals and PFAS in groundwater

7.4 Receptors and Pathways for Exposure

A CSM has been developed for the identified contaminants of interest for specific sources/pathways/ receptors. The CSM has been developed for the proposed construction works including filling and surcharge on the existing soils and influence on groundwater, for soil movement around the site (such as drain excavation), and post-construction development. The scenarios are based on a commercial/industrial land use.

Table 11: Receptors and Pathways for Exposure

Activity	Sources	Receptors	Exposure pathways
Construction Works	Low level PFAS in soils	Construction Workers	Ingestion/contact/inhalation with soil/dust
		Aquatic Ecosystems	Migration of disturbed soils into surface waters by erosion.
		General Public	Migration of disturbed soils into surface waters and then: • Contact by recreational users of surface waters • Consumption of contaminated fish/aquatic species
	Heavy metals in groundwater	Construction Workers	Accidental ingestion/contact with (nickel impacted) groundwater.
		Aquatic Ecosystems	Discharge of nickel, zinc, cadmium, copper and chromium-impacted groundwater into surface waters.
	PFAS in groundwater	Surface Water	As the drains' bases in some areas are deeper than groundwater levels, groundwater can passively fill the drains when low.
		Construction Workers	Accidental ingestion/contact with extracted groundwater or once in surface water.
		Aquatic Ecosystems	Discharge of extracted groundwater directly into surface waters or via the drains.
		General Public	Discharge of groundwater into surface waters and then: • Contact by recreational users of surface waters • Consumption of contaminated fish/aquatic species

8.0 ENVIRONMENTAL RISK ASSESSMENT

8.1 Qualitative Assessment

Risk is measured as a function of the likelihood and consequence of an event occurring. This risk assessment has been completed with the consideration of source - pathway - receptors, as described in the conceptual site model above and is in general accordance with the NEPM 2013.

The qualitative risk assessment was undertaken in general accordance with AS/NZS ISO 31000:2009 Risk management - Principles and guidelines and adopting the likelihood, consequence rankings summarised below.

Table 12: Qualitative Risk Assessment Rankings

Likelihood (L)	Description	Consequences (C)	Description
1) Rare	Impact is unlikely to occur within lifetime of project operations. No further management or engineering controls are required to minimise potential for occurrence	1) Low	Negligible or acceptable impact. No further management or engineering controls are required assuming no change to current conditions.
2) Low	Minor management control may need to be considered to reduce likelihood of occurrence.	2) Low to Moderate	Impact may be acceptable. Further monitoring is required to establish potential significance. Implementation of simple management controls.
3) Moderate	Impact has moderate likelihood of occurrence. Appropriate management control can result in low likelihood of occurrence.	3) Moderate	Moderate impact. Potentially acceptable if appropriate management controls are implemented.
4) High	Appropriate management control may not be sufficient to minimise likelihood and thus engineering or design solution may need to be considered.	4) Moderate to High	Impact has the potential to be unacceptable. Further monitoring may be required to establish potential significance. Implementation of appropriate management controls is required.
5) Almost Certain	Impact is believed to be inevitable or has already occurred. Management controls cannot practically minimise likelihood of occurrence to acceptable levels. Engineering or design solutions are required, if possible.	5) High	Unacceptable impact. The potential impact has a high severity and cannot necessarily be managed, should it occur.

The resulting qualitative risk ranking matrix adopted for the assessment is presented below.

Table 13: Qualitative Risk Assessment Ranking Matrix

Risk Ranking (RR)	Consequences (C)				
Likelihood (L)	**1) Low**	**2) Low to Moderate**	**3) Moderate**	**4) Moderate to High**	**5) High**
1) Rare	1 (Low)	2 (Low)	3 (Low)	4 (Low)	5 (Moderate)
2) Low	2 (Low)	4 (Low)	6 (Moderate)	8 (Moderate)	10 (Moderate)
3) Moderate	3 (Low)	6 (Moderate)	9 (Moderate)	12 (Moderate)	15 (High)
4) High	4 (Low)	8 (Moderate)	12 (Moderate)	16 (High)	20 (High)
5) Certain	5 (Moderate)	10 (Moderate)	15 (High)	20 (High)	25 (High)

Where:

- Low Risk Ranking: Score 0 to 4. Acceptable, no specific management and/or engineering controls typically necessary.
- Moderate Risk Ranking: Score 5 to 15. Potentially acceptable subject to appropriate management and/or engineering controls.
- High Risk Ranking: Score 15 and above. Not acceptable. Engineering controls generally required, possibly in conjunction with management controls.

Ranking for the source-pathway-receptor identified in the CSM are summarised below.

Table 14: Risk Rankings – Disturbance During Construction

Receptors	Pathways	Assessment Factors	L	C	RR	Summary Item/ Mitigation Measure
Construction Workers	Ingestion/contact/inhalation with soil/dust	PFAS concentrations below human health criteria. Low likelihood of ingestion and low volumes ingested.	1	1	1	Negligible or acceptable impact. No mitigation required.
	Accidental ingestion/contact with groundwater.	PFAS and nickel concentrations exceeds human health (drinking water) criteria, in a limited number of wells, but not primary contact criteria. Low likelihood of ingestion and low volumes ingested. Minor groundwater disturbance only expected during services and infrastructure footings.	3	1	3	Low risk, acceptable impact. Control measures to be put in place and PPE to be used to prevent accidental ingestion.
Aquatic Ecosystems	Migration of disturbed soils into surface waters.	Site perimeter drains capture run-off prior to testing and release during high rainfall events. There is strong evidence that leachable levels of PFAS are low.	1	1	1	Negligible or acceptable impact. Adopt sediment and erosion control measures during construction works site to mitigate migration.

Receptors	Pathways	Assessment Factors	L	C	RR	Summary Item/ Mitigation Measure
	Discharge of extracted groundwater into surface waters.	PFAS concentrations in groundwater are below the criteria for the protection of aquatic ecosystems. PFAS is present in surrounding waters which will be the receiving waters if accidental or active discharge occurs. Some heavy metals exceed the marine water aquatic guidelines, but active pumping of groundwater will occur only onto the ground or temporary seepage ponds. Groundwater on site is captured via the drains or monitored at the point of discharge off-site.	3	1	3	Moderate Risk. Active discharge to surface waters should be prevented. Remediation or management of extracted groundwater required to reduce the risk. Groundwater entering passively into the drains is managed by monitoring prior to release in accordance with the NEMP while taking into account existing baseline concentrations, and attenuation from rain events and tidal influences.
General Public	Direct contact by recreational users of surface water impacted by soil migration.	Leachable levels of PFAS from site soils had concentrations below human health criteria.	1	1	1	Negligible or acceptable impact
	Consumption of Fish/Aquatic species from surface water impacted by soil migration.	PFAS levels in Fish/Aquatic Species not known. PFAS leachability concentrations do not suggest disturbed soil will result in significant PFAS release.	1	2	2	Low risk, acceptable impact. Adopt sediment and erosion control measures during construction works site to mitigate soil migration.
	Direct contact by recreational users with surface waters impacted by discharge of extracted groundwater.	PFAS concentrations in groundwater below health recreational criteria.	1	1	1	Low risk, acceptable impact.
	Consumption of Fish/Aquatic species from surface water impacted by discharge of extracted groundwater.	PFAS levels in Fish/Aquatic Species not known. PFAS concentrations in groundwater are below marine water criteria.	1	1	1	Low risk, acceptable impact.

9.0 CONCLUSIONS

Based on the results of this assessment, the following conclusions are drawn for the site.

- Groundwater was encountered at levels between about 1.3m AD and 2.3m AD across the site and inferred to be flowing toward the north east, i.e. generally towards Kedron Brook (approximately 1.5 km north east of site).
- Low levels of total PFAS were present in soils at concentrations representing a negligible to low risk to human health and aquatic ecosystems.
- PFAS and nickel were present in some groundwater samples at concentrations above human health criteria. The concentrations in groundwater represent a low risk to construction workers and a low risk to recreational surface water users.
- PFAS and heavy metals (nickel, zinc, cadmium, copper and chromium) were present in some groundwater samples at concentrations exceeding the criteria for the protection of marine aquatic ecosystems. The concentrations represent a low risk to marine aquatic ecosystems if discharged to surface waters.

10.0 RECOMMENDATIONS

Based on the findings of this preliminary investigation it is recommended that:

- Erosion and control measures implemented during construction should be maintained to prevent migration of soils into surrounding drains and waterways.
- Direct discharge of any groundwater (extracted during construction) into surrounding drains should be prevented. Active discharge should be onto site soils or into temporary seepage ponds, other control measures and use of PPE should be adopted to prevent accidental ingestion by construction workers. Passive groundwater movement generally enters the perimeter drains and therefore should be managed through the ASS MP or scheduled monitoring program.
- Perimeter drain levels are to be maintained at levels consistent with seasonal groundwater levels, in order to reduce groundwater influx into the drain or excessive water leaving site, as detailed in the ASS Management Plan.

11.0 CONSULTATION

This document has been provided to the following stakeholders and comments have been received from the listed parties:

- The wider Brisbane Airport Corporation Pty Limited
- The Consultant preparing the Exposure Draft Major Development Plan (edMDP)
- Commonwealth Department of Infrastructure, Regional Development and Cities
- Commonwealth Department of the Environment and Energy

12.0 IMPORTANT INFORMATION

Your attention is drawn to the document titled - “Important Information Relating to this Report”, which is included in **Attachment C** of this technical memorandum. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

13.0 REFERENCES

Golder 2015. Golder Associates, Acid Sulphate Soil and Contamination Desktop Review, Proposed Auto Precinct Brisbane Airport, February 2015

Golder 2017 a. Golder Associates, Contamination Assessment, Proposed Auto Mall Precinct Stage 2, 1 June 2017, reference 1538021-011-R-Rev2

Golder 2017b. Golder Associates, Contamination Assessment, Proposed Auto Mall Precinct Stage 1, 5 June 2017, reference 1538021-013-R-Rev2

Golder 2017c. Golder Associates, Acid Sulphate Soil Assessment, Proposed Auto Mall Precinct Stage 1, 5 June 2017, reference 1538021-014-R-Rev2

Golder 2017d. Golder Associates, Acid Sulphate Soil Assessment, Proposed Auto Mall Precinct Stage 2, 5 June 2017, reference 1538021-012-R-Rev1

Golder 2018. Golder Associates, Mineral Sands at Stage 2 of the Auto Mall Development – Results of the Assessment, 10 October 2018, 1664971-045-TM-Rev0

PSK 2018. PSK, Site Monitoring Future Auto Mall Precinct– Stages 1, 2 and 3, Brisbane Airport, November 2018, 12 December 2018, 0517-005-020

Golder 2019. Golder Associates, Proposed Auto Mall Precinct, Acid Sulphate Soil Management Plan, reference 1664971-001-R-Rev4, update in progress.

Aurecon August 2017, Proposed Brisbane Airport Auto Mall- Environmental Management Plan. Revision 3. Prepared for Brisbane Airport Corporation.

Andrew Howes
Principal Environmental Scientist

ERC/AWH/xx

Attachments:

Figure 1: Proposed Development with Contamination Investigation Locations

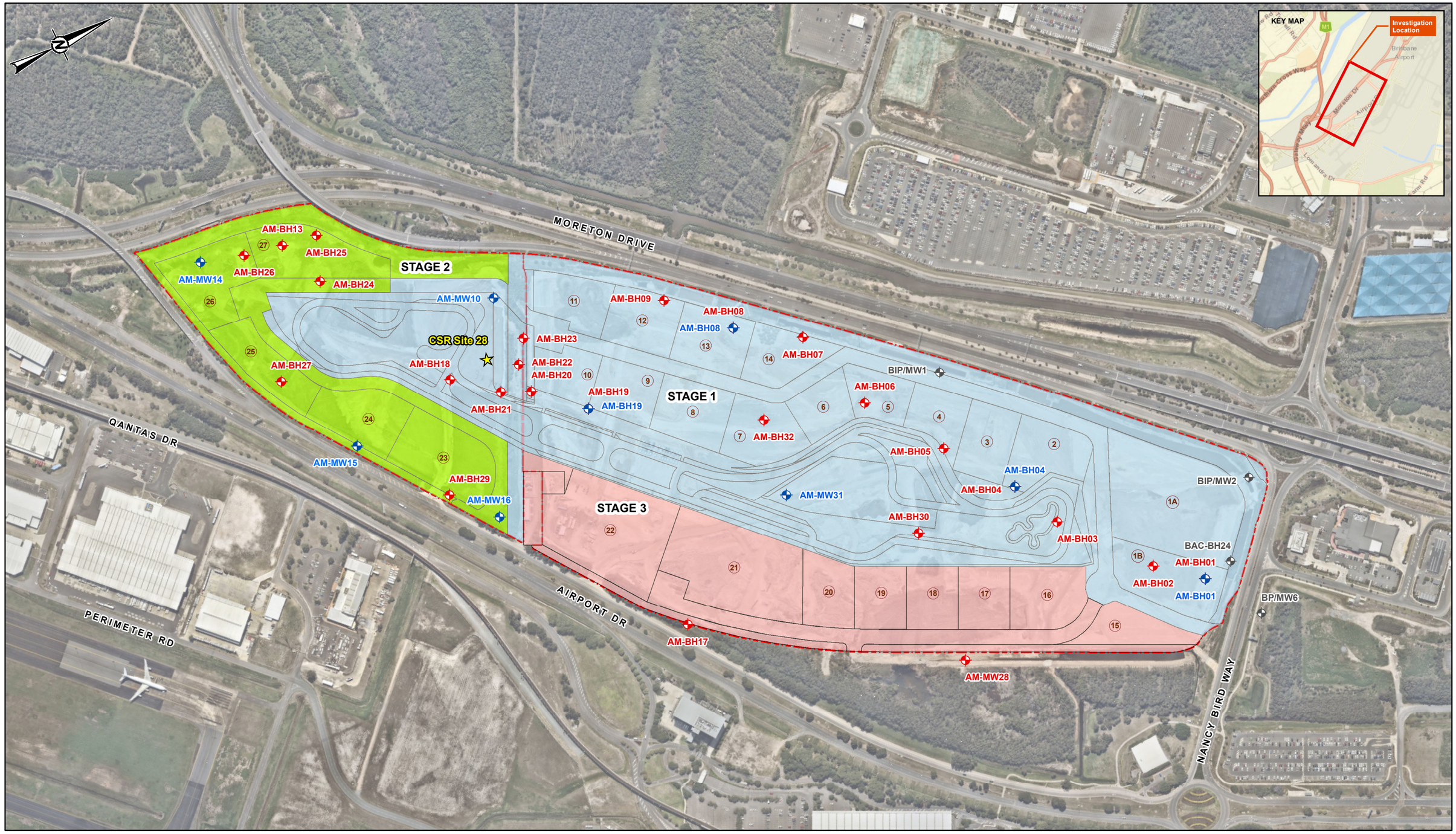
Attachment A – Surface Water Sampling Locations (from PSK)

Attachment B – Surface Water Metal Sampling Results (from PSK)

Attachment C – Important Information

https://golderassociates.sharepoint.com/sites/31996g/correspondence/deliverables/18107809-001-tm-rev0 auto mall contamination summary report.docx

Figure 1 - Proposed Development with Contamination Investigation Locations



LEGEND

- BAC CSR (2008)

Current Investigation

- Well
- Borehole

Previous Investigation

- Monitoring Well

BRIS0012 SK-025 (24/08/2016)

- BAC Auto Precinct Layout
- Indicative Stage 1
- Indicative Stage 2
- Indicative Stage 3
- Site Boundary

Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994

0 50 100 150 200
1:5,000 @ A3 METRES

NOTE(S)

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

REFERENCE(S)

1. Investigation Locations Supplied by Golder 2018
2. Development Yield Plan layout supplied by BAC as CAD file 'BRIS0012 SK-004[E] DEVELOPMENT YIELD PLAN.pdf.dwg'

CLIENT
BRISBANE AIRPORT CORPORATION

PROJECT
AUTO MALL

CONSULTANT
GOLDER

DD/MM/YYYY	2/22/2019
DESIGNED	DP
PREPARED	DC
REVIEWED	DP
APPROVED	EC

TITLE
PROPOSED DEVELOPMENT WITH PREVIOUS AND CURRENT CONTAMINATION INVESTIGATION LOCATIONS

PROJECT NO.	CONTROL	REV.	FIGURE
18107809	001	C	1

PATH: R:\01 Client\BAC\18107809\99_PROJECTS\18107809-001-R-Rev\C-F001-Proposed-Development-Prev-Current-Contam-Investigation-Location.mxd PRINTED ON: 2019-02-22 AT: 5:24:48 PM
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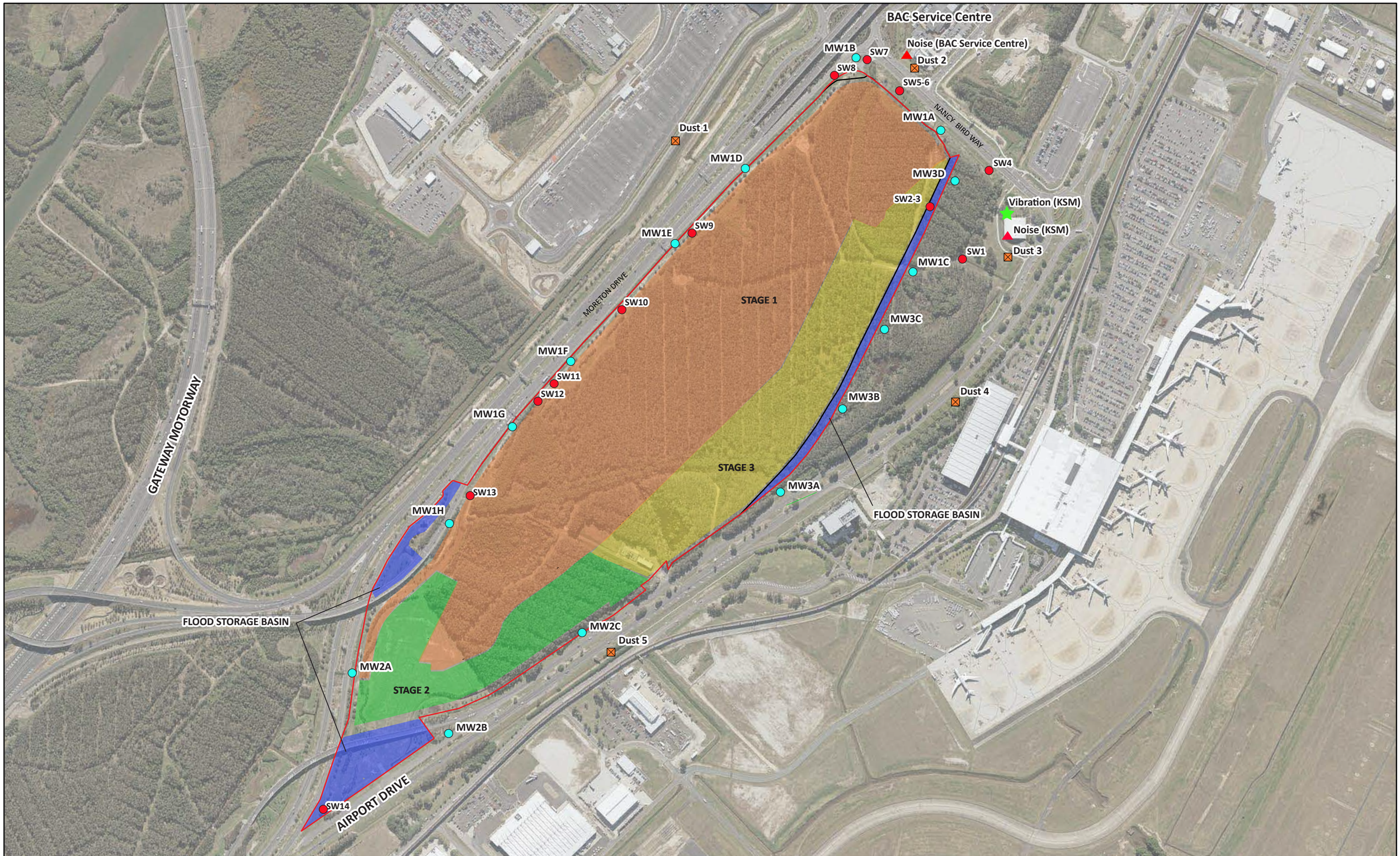
25mm

APPENDIX A

Surface Water Sampling Locations (from PSK)



LEGEND

- Groundwater Monitoring Well
- Vibration Monitoring location
- Dust Monitoring location
- Noise Monitoring location
- Surface Water Monitoring location

Notes:
- Baseplan extracted from ImageGlobe 2016. Extracted 06/11/2017
- Stages of development extracted from Brisbane Airport Auto Mall EMP Rev3, Figure 2. Stages of Development, Version 3, Job No: 255492-002

PSK Environmental

Client: Brisbane Airport Corporation		Project: Monthly Monitoring Future Auto Mall Precinct Brisbane Airport	N
Drawn: AS/RM	Date: 26/02/2019	Title: SITE PLAN AND SAMPLING LOCATIONS	
Checked: SLS	Date: 26/02/2019		
Scale: 0m – 175m		Job No.: J0517-005-022	Fig. No.: 1 / Rev: / A3

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APPENDIX B

Water Sampling Results (from PSK)

SUMMARY OF SURFACE WATER MONITORING RESULTS (Monthly Monitoring_23 January & 6 February 2019)
Future Auto Mall Precinct
Brisbane Airport Corporation, Brisbane Airport J0517-005

Sample ID	Sample date	Sample Time	ALS Batch Number	Field Parameters					Acidity/Alkalinity		Dissolved Metals								Total Metals							
				pH	EC	DO		Turbidity	Total Alkalinity as CaCO3	Acidity as CaCO3	Aluminium	Arsenic	Cadmium	Copper	Lead	Nickel	Zinc	Iron	Aluminium	Arsenic	Cadmium	Copper	Lead	Nickel	Zinc	Iron
Unit				pH unit	mS/cm	ppm	Saturation (%)	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Limit of Reporting				0.01	0.1	0.1		0.1	1	1	0.01	0.001	0.0001	0.001	0.001	0.001	0.005	0.05	0.01	0.001	0.0001	0.001	0.001	0.001	0.005	0.05
SW7	23/01/2019	12:10	EB1901744	7.4	89.4	5.7	82	9.7	176	22	<0.05	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.025	<0.05	0.14	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.026	1.17
SW7	6/02/2019	13:25	EB1902990	7.9	40.4	2.8	40	42.3	176	22	<0.05	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.025	0.07	0.36	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.026	1.30
SW12	23/01/2019	9:45	EB1901744	6.9	58.6	2.8	40	22.5	198	50	<0.05	<0.005	<0.0005	0.01	<0.005	0.01	0.043	0.07	0.2	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.026	2.34
SW12	6/02/2019	13:05	EB1902990	8.1	30.9	4.4	60	11.1	198	50	<0.05	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.025	<0.05	0.34	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.026	0.65
SW14	6/02/2019	14:35	EB1902990	8.9	40.3	7.0	89	23.4	597	109	<0.05	<0.005	<0.0005	<0.005	<0.005	0.006	<0.025	0.06	0.3	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.026	0.59
Water Quality Objectives - Kedron Brook Floodway Drain^				**6.5-8.5**	-	-	**80-100**	**20**	-	-	-	-	-	-	-	-	-	-	**0.65***	**0.050**	**0.002**	**0.005**	**0.005**	**0.015**	**0.050**	**1.01****
ASS Performance Criteria - (Aurecon 2017)				**>6.0**	-	-	-	-	-	**<40**	**<1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

from PSK

TABLE A1: SUMMARY OF SURFACE WATER MONITORING RESULTS (Monthly Monitoring_23 January 2019)
Future Auto Mall Precinct
Brisbane Airport Corporation, Brisbane Airport
J0517-005

Sample ID	Sample date	Sample Time	ALS Batch Number	Field Parameters					Acidity/Alkalinity		Dissolved Metals								Total Metals								Nutrients						
				pH	EC	DO		Turbidity	Total Alkalinity as CaCO3	Acidity as CaCO3	Aluminium	Arsenic	Cadmium	Copper	Lead	Nickel	Zinc	Iron	Aluminium	Arsenic	Cadmium	Copper	Lead	Nickel	Zinc	Iron	Total Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Phosphorus as P	Nitrite + Nitrate as N	Dissolved TKN as N	Filtered Total Nitrogen as N	Filtered Total Phosphorus as P
Unit				pH unit	mS/cm	ppm	Saturation (%)	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Limit of Reporting				0.01	0.1	0.1		0.1	1	1	0.01	0.001	0.0001	0.001	0.001	0.001	0.005	0.05	0.01	0.001	0.0001	0.001	0.001	0.001	0.005	0.05	0.1	0.1	0.01	0.01	0.1	0.1	0.01
SW1	23/01/2019	12:30	EB1901744	8.2	3.1	9.7	138	8.7	102	1	0.01	0.002	<0.0001	0.002	<0.001	0.002	0.006	0.16	0.46	0.003	<0.0001	<0.001	<0.001	0.001	0.007	2.64	1.8	1.8	0.23	0.02	0.6	0.6	0.14
SW2-3	23/01/2019	12:20	EB1901744	8.6	14.9	12.5	175	11.3	254	<1	0.01	0.009	<0.0001	0.003	<0.001	0.001	<0.005	0.1	0.06	0.01	<0.0001	0.002	<0.001	0.002	<0.005	0.66	4.8	4.8	0.35	<0.01	2.6	2.6	0.12
SW4	23/01/2019	12:15	EB1901744	8.1	7.9	7.6	105	6.2	191	<1	0.01	0.003	<0.0001	0.001	<0.001	<0.001	0.006	0.25	0.07	0.003	<0.0001	<0.001	<0.001	0.001	<0.005	0.7	2.8	1.8	0.29	0.99	1.4	2.4	0.19
SW5-6	23/01/2019	11:20	EB1901744	8.6	17.2	7.8	110	6.3	229	<1	0.02	0.005	<0.0001	0.004	<0.001	0.01	0.006	0.09	0.03	0.006	<0.0001	<0.001	<0.001	0.001	<0.005	0.36	2.7	2.7	0.14	0.04	2.1	2.1	0.06
SW7	23/01/2019	12:10	EB1901744	7.4	89.4	5.7	82	9.7	176	22	<0.05	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.025	<0.05	0.14	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.026	1.17	1.2	1.1	0.12	0.1	1.3	1.4	0.14
SW8	23/01/2019	11:10	EB1901744	7.5	56.3	8.2	110	4.1	101	6	0.11	<0.005	<0.0005	0.009	<0.005	0.054	<0.025	0.25	0.12	<0.005	<0.0005	<0.005	<0.005	0.009	<0.026	0.8	1.8	1.8	<0.05	<0.01	1.7	1.7	<0.05
SW9	23/01/2019	10:50	EB1901744	2.7	58.0	6.4	86	1.9	<1	556	15.4	0.007	0.0013	0.025	0.01	0.527	0.709	91.4	16.2	0.007	0.0014	0.01	0.006	0.505	0.681	89.8	8.8	8.8	<0.05	<0.01	8.7	8.7	<0.05
SW10	23/01/2019	10:40	EB1901744	2.6	67.6	7.1	99	2.7	<1	1320	1.84	0.01	0.0006	0.13	0.03	0.158	0.315	400	1.9	0.011	<0.0005	0.011	0.008	0.114	0.147	433	27	27	<0.05	<0.01	28	28	<0.05
SW11	23/01/2019	10:20	EB1901744	7.8	44.2	10.3	140	20.4	197	28	<0.05	<0.005	<0.0005	0.005	<0.005	0.005	<0.025	0.09	<0.05	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.026	2.51	2.2	2.2	<0.05	0.02	1.8	1.8	<0.05
SW12	23/01/2019	9:45	EB1901744	6.9	58.6	2.8	40	22.5	198	50	<0.05	<0.005	<0.0005	0.01	<0.005	0.01	0.043	0.07	0.2	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.026	2.34	1.1	1	0.08	0.06	0.9	1	0.08
SW13	23/01/2019	9:30	EB1901744	7.3	54.4	1.7	25	8.5	597	109	<0.05	0.008	<0.0005	0.026	<0.005	0.029	0.046	0.1	<0.05	0.008	<0.0005	0.008	<0.005	0.007	<0.026	0.74	3.2	3.2	0.41	0.02	3.2	3.2	0.42
Water Quality Objectives - Kedron Brook Floodway Drain^				6.5-8.5	-	-	80-100	20	-	-	-	-	-	-	-	-	-	-	0.65*	0.050	0.002	0.005	0.005	0.015	0.050	1.01**	0.45	-	0.06	-	-	-	-
ASS Performance Criteria - (Aurecon 2017)				>6.0	-	-	-	-	-	<40	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

^Water Quality Objectives (WQO) as per Table 3.14 of the Project EMP (Aurecon 2017)

*Aluminium WQO has been calculated based on background concentrations detected at KB5 + 10%

**Iron WQO has been calculated based on background concentrations detected at KB5 + 10%

The sampling locations as per Golder Associates TM (Doc Ref. 1664791 -041-TM-Rev1)

EC = Electrical Conductivity, DO = Dissolved Oxygen

"-" Denotes no WQO

Values shaded exceed the WQOs for Kedron Brook Dloodway Drain or ASS Performance Criteria

PSK Environmental

TABLE A2: SUMMARY OF SURFACE WATER MONITORING RESULTS (Interim site visit_ 06 February 2019)
Future Auto Mall Precinct
Brisbane Airport Corporation, Brisbane Airport
J0517-005

Sample ID	Sample date	Sample Time	ALS Batch Number	Field Parameters					Acidity/Alkalinity		Dissolved Metals								Total Metals								Nutrients						
				pH	EC	DO		Turbidity	Total Alkalinity as CaCO3	Acidity as CaCO3	Aluminium	Arsenic	Cadmium	Copper	Lead	Nickel	Zinc	Iron	Aluminium	Arsenic	Cadmium	Copper	Lead	Nickel	Zinc	Iron	Total Nitrogen as N	Total Kjeldahl Nitrogen as N	Total Phosphorus as P	Nitrite + Nitrate as N	Dissolved TKN as N	Filtered Total Nitrogen as N	Filtered Total Phosphorus as P
Unit				pH unit	mS/cm	ppm	Saturation (%)	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Limit of Reporting				0.01	0.1	0.1		0.1	1	1	0.01	0.001	0.0001	0.001	0.001	0.001	0.005	0.05	0.01	0.001	0.0001	0.001	0.001	0.001	0.005	0.05	0.1	0.1	0.01	0.01	0.1	0.1	0.01
SW7	6/02/2019	13:25	EB1902990	7.9	40.4	2.8	40	42.3	176	22	<0.05	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.025	0.07	0.36	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.026	1.3	1.6	1.3	0.1	0.35	1.2	1.6	0.06
SW12	6/02/2019	13:05	EB1902990	8.1	30.9	4.4	60	11.1	198	50	<0.05	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.025	<0.05	0.34	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.026	0.65	1.2	1	0.07	0.23	0.9	1.1	0.05
SW14	6/02/2019	14:35	EB1902990	8.9	40.3	7.0	89	23.4	597	109	<0.05	<0.005	<0.0005	<0.005	<0.005	0.006	<0.025	0.06	0.3	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.026	0.59	1.8	1.8	0.19	0.01	1.2	1.2	0.13
Water Quality Objectives - Kedron Brook Floodway Drain^				6.5-8.5	-	-	80-100	20	-	-	-	-	-	-	-	-	-	-	-	0.050	0.002	0.005	0.005	0.015	0.050	-	0.45	-	0.06	-	-	-	-
ASS Performance Criteria - (Aurecon 2017)				>6.0	-	-	-	-	-	<40	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

^Water Quality Objectives (WQO) as per Table 3.14 of the Project EMP (Aurecon 2017)

The sampling locations as per Golder Associates TM (Doc Ref. 1664791 -041-TM-Rev1)

EC = Electrical Conductivity, DO = Dissolved Oxygen

"-" Denotes no WQO

Values shaded exceed the WQOs for Kedron Brook Dloodway Drain or ASS Performance Criteria

PSK Environmental

APPENDIX C

Important Information

The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

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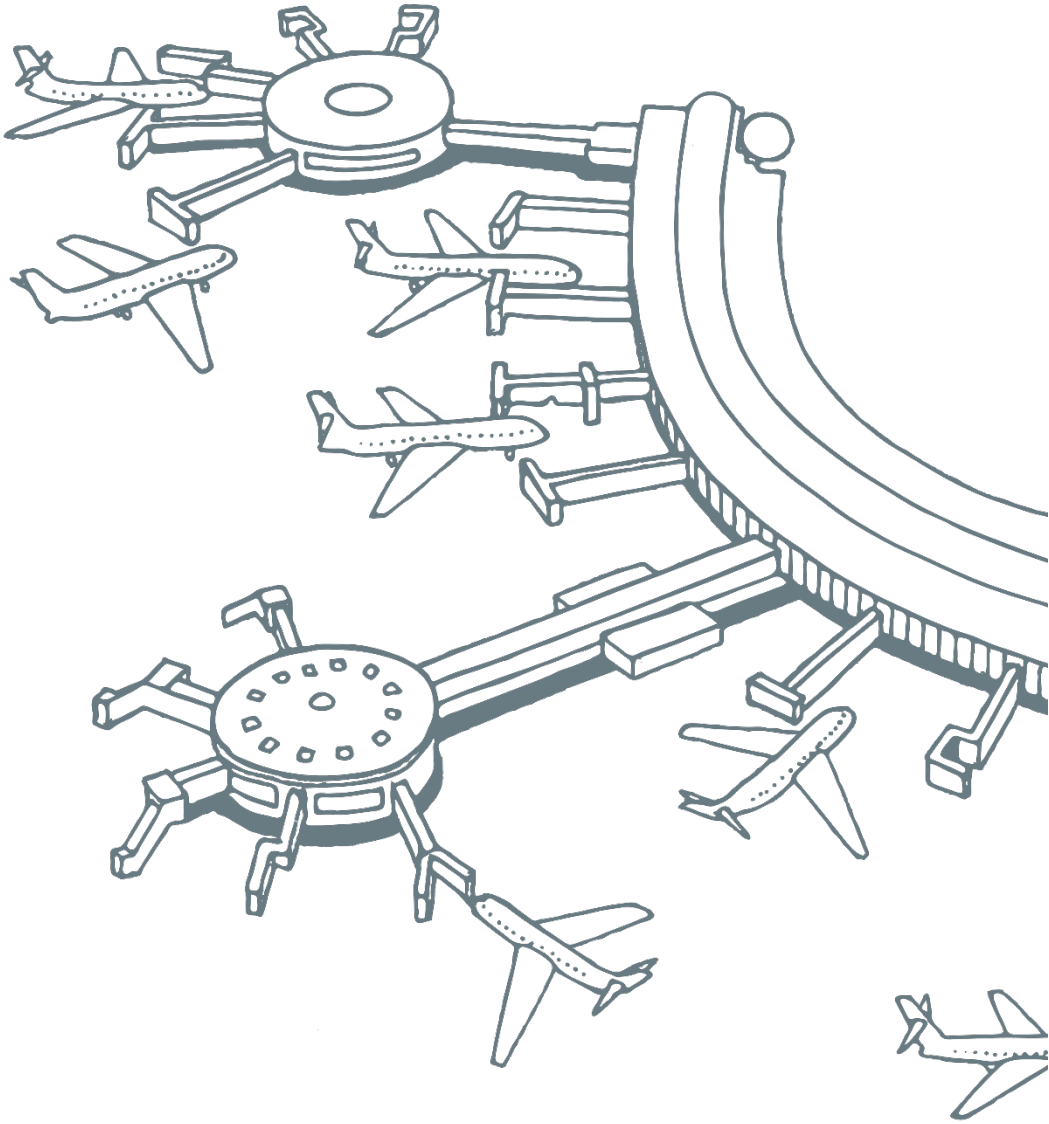
APPENDIX H
SELF-ASSESSMENT OF IMPACTS



BNE Auto Mall

Environment Protection and Biodiversity Conservation Act Self-Assessment of Impacts

Brisbane Airport Corporation

Reference: 503043

Revision: 1

7 June 2019

aurecon

Bringing ideas to life

Document control record

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1 Introduction

1.1 Project overview

To ensure compliance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), BAC have commissioned Aurecon to undertake an EPBC Act self-assessment for matters of national environmental significance (MNES) and impacts to land owned by the Commonwealth of Australia, for the construction and operation of the BNE Auto Mall (the Project) as part of BAC's Major Development Plan (MDP) application.

The Project involves the construction of the BNE Auto Mall on an unused 51.3 ha parcel of land bordered by Moreton Drive, Airport Drive and Nancy Bird Way. The BNE Auto Mall is set to be Australia's benchmark automotive precinct designed for new and used car buyers, motoring enthusiasts and the public. The development will include a diverse mix of uses such as:

- A range of commercial uses including, but not limited to, automotive retail dealerships, retail showrooms, and retail tenancies
- Dedicated manufacturers brand experience centres
- An automotive performance track, associated manoeuvring and handling courses, skidpan and 4WD testing circuit
- Track operations and management centre.

Clearing of vegetation within the Project area commenced in September 2017 under the land development phase of the Project. The Project area contains no natural vegetation communities and no potential natural habitats for shelter, foraging, animal breeding places. The project area boundary and aerial photography showing the Project area's current condition is provided in Figure 1.1.

The BNE Auto Mall will comprise a combination of hardstand, landscaped areas and the performance track. New landscaped areas will be provided as part of the development, which will be designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. Landscape design will incorporate resilient, native species found within the airport's coastal setting. Species to be used as part of the planting palate, will not attract birds or flying foxes and, when fully mature, will not compromise operational airspace associated with airport operations.

1.2 Purpose and scope of this report

Desktop review of MNES, derived from the EPBC Protected Matters Search Tool (refer Appendix A) indicated that 120 separated MNES are predicted to occur within a 5 km radius of the Project area. An assessment of the likelihood of each MNES to occur within the Project area and its immediate surrounds has been undertaken. Results of this analysis indicate that 39 MNES have potential to occur based on the presence of preferred habitat within the Project area (refer to species identified in bold text in Table 1.1). An assessment of potential occurrence of each of the identified MNES is provided in Table 1.1.

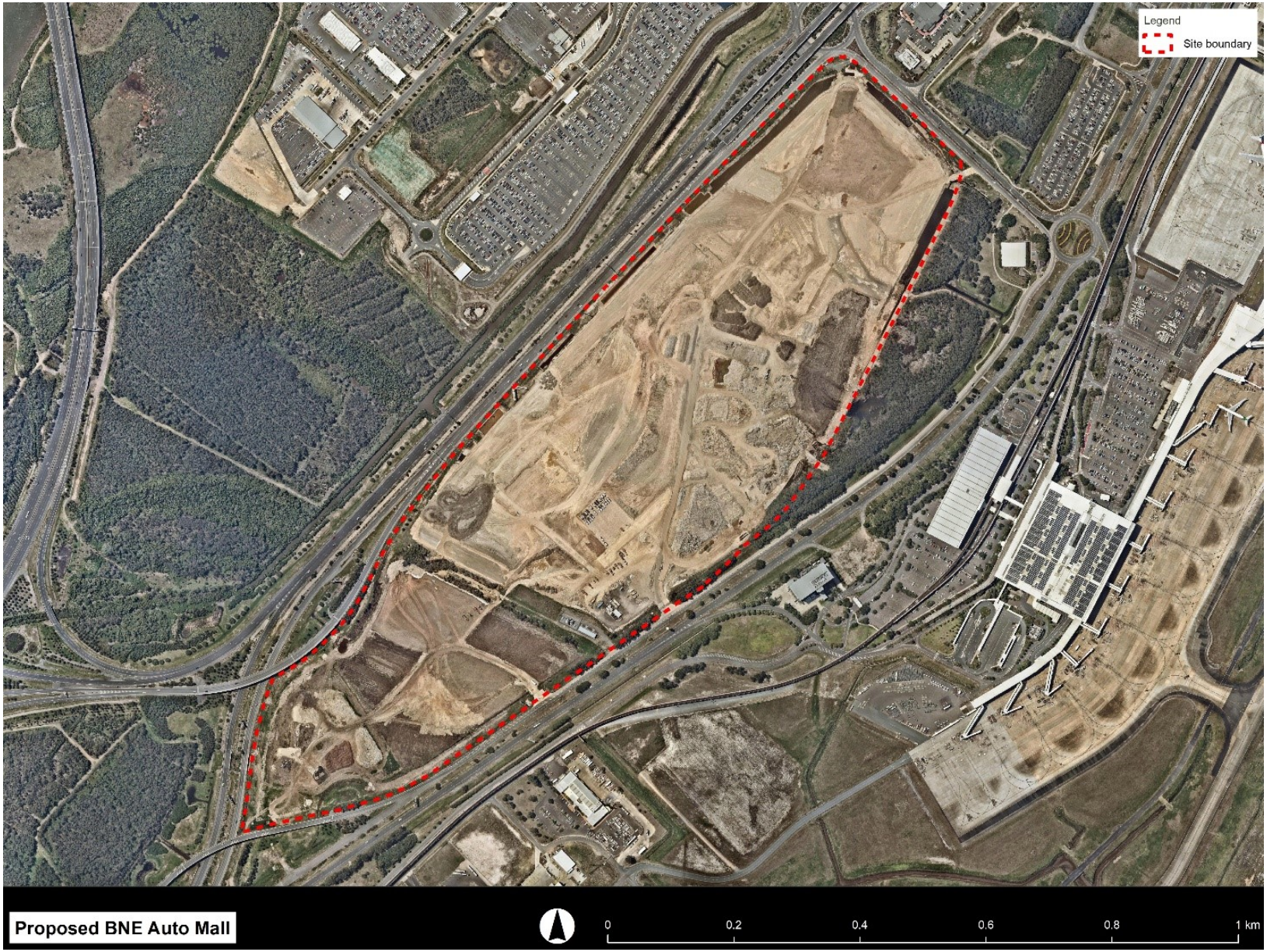


Figure 1.1 Project area and current condition (as of 3 November 2018)

Table 1.1 Matters of national environmental significance species identified as potentially occurring within the Project area

Scientific name (Common name)	Conservation status	Preferred habitat	Likelihood of occurrence
Commonwealth land			
Land owned by the Commonwealth of Australia	Protected	N/A	**Present** – Project area is located within Commonwealth owned land
Wetlands of international importance			
Moreton Bay	Protected (Ramsar wetland)	N/A	Absent – the Project area is terrestrial
Threatened ecological communities (TECs)			
Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community	Endangered	N/A	Absent – the Project area does not contain this TEC
Lowland Rainforest of Subtropical Australia	Critically endangered	N/A	Absent – the Project area does not contain this TEC
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	N/A	Absent – the Project area does not contain this TEC
Flora			
Arthraxon hispidus (Hairy-joint Grass)	Vulnerable	Rainforest, seeps and the edge of freshwater wetlands	Unlikely, suitable habitat does not exist within the Project area
Bosistoa transversa (Three-leaved Bosistoa)	Vulnerable	Rainforest	Unlikely, suitable habitat does not exist within the Project area
Cryptocarya foetida (Stinking Cryptocarya)	Vulnerable	Rainforest	Unlikely, suitable habitat does not exist within the Project area
Dichanthium setosum (Bluegrass)	Vulnerable	Native grasslands	Unlikely, suitable habitat does not exist within the Project area
Macadamia integrifolia (Macadamia Nut)	Vulnerable	Rainforest	Unlikely, suitable habitat does not exist within the Project area
Macadamia ternifolia (Small-fruited Queensland Nut)	Vulnerable	Rainforest	Unlikely, suitable habitat does not exist within the Project area
Macadamia tetraphylla (Rough-shelled Bush Nut)	Vulnerable	Rainforest	Unlikely, suitable habitat does not exist within the Project area

Scientific name (Common name)	Conservation status	Preferred habitat	Likelihood of occurrence
Phaius australis (Lesser Swamp-orchid)	Endangered	Wallum swamps, Paperbark swamps and wet heathlands	Unlikely, suitable habitat does not exist within the Project area
Samadera bidwillii (Quassia)	Vulnerable	Range of habitats including Eucalypt forest, woodland, farmland	Unlikely, suitable habitat does not exist within the Project area
Thesium australe (Austral toadflax)	Vulnerable	Grasslands on black soil	Unlikely, suitable habitat does not exist within the Project area.
Fauna			
Birds			
Anthochaera phrygia (Regent Honeyeater)	Critically endangered	Eucalypts forests and woodlands. Areas containing mistletoes	Unlikely, suitable habitat does not exist within the Project area
***Botaurus poiciloptilus* (Australasian bittern)**	Endangered	Freshwater and estuarine wetlands, drainage lines and flooded paddocks containing emergent macrophytes such as reeds	**Possible** – suitable roosting habitat may exist within the Project area
***Calidris canutus* (Red knot)**	Endangered, Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Calidris ferruginea* (Curlew sandpiper)**	Critically endangered, Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Calidris tenuirostris* (Great knot)**	Critically endangered, Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area.
***Charadrius leschenaultii* (Greater sand plover)**	Vulnerable, Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Charadrius mongolus* (Lesser sand plover)**	Endangered, Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide (HAT) level	**Possible** – suitable roosting habitat may exist within the Project area
Dasyornis brachypterus (Eastern bristlebird)	Endangered	Within Queensland, grassland areas associated with mountainous areas located adjacent to Eucalypt forest	Unlikely, outside of the known range for this species
Diomedea antipodensis (Antipodean albatross)	Vulnerable, Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
Diomedea antipodensis gibsoni (Gibson's albatross)	Vulnerable	Pelagic species	Unlikely, suitable habitat absent from Project area

Scientific name (Common name)	Conservation status	Preferred habitat	Likelihood of occurrence
Diomedea exulans (Wandering slbatross)	Vulnerable, Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
Erythrotriorchis radiatus (Red Goshawk)	Vulnerable	Eucalypt forest and woodland associated with drainage lines. The presence of large emergent canopy trees is essential and are typically chosen as nesting locations	Unlikely, suitable habitat absent from Project area
Fregetta grallaria grallaria (White-bellied Storm-Petrel	Vulnerable	Pelagic species	Unlikely, suitable habitat absent from Project area
Geophaps scripta scripta (Squatter Pigeon)	Vulnerable	Native grassland, open Eucalypt forest and woodland west of the Great Dividing Range.	Absent, outside of the known range for this species
Lathamus discolor (Swift Parrot)	Critically endangered	Eucalypt forests and woodland. This species feeds on Pollen and nectar and feeds only in Tasmania	Unlikely, outside of the known range for this species
***Limosa lapponica baueri* (Bar-tailed godwit)**	Vulnerable	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Limosa lapponica menzbieri* (Bar-tailed godwit)**	Critically endangered	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
Macronectes giganteus (Southern Giant-Petrel)	Endangered, Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
Macronectes halli (Northern Giant Petrel)	Vulnerable, Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
***Numenius madagascariensis* (Eastern curlew)**	Critically endangered, Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
Pachyptila turtur subantarctica (Fairy Prion)	Vulnerable	Pelagic species	Unlikely, suitable habitat absent from Project area
Poephila cincta cincta (Southern Black-throated Finch)	Endangered	Grassland areas associated with drainage lines and wetlands. Ventures into open forest and woodland.	Absent, outside of the known range for this species
Pterodroma neglecta neglecta (Kermadec Petrel)	Vulnerable	Pelagic species	Unlikely, suitable habitat absent from Project area
***Rostratula australis* (Australian painted-snipe)**	Endangered	Freshwater and potentially estuarine wetlands, drainage lines and flooded paddocks	**Possible** – suitable habitat may exist within the Project area, along drainage lines
Thalassarche cauta cauta (Shy Albatross)	Vulnerable, Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area

Scientific name (Common name)	Conservation status	Preferred habitat	Likelihood of occurrence
Thalassarche cauta steadi (White-capped Albatross)	Vulnerable, Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
Thalassarche eremita (Chatham Albatross)	Vulnerable, Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
Thalassarche impavida (Campbell Albatross)	Vulnerable, Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
Thalassarche melanophris (Black-browed Albatross)	Vulnerable, Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
Thalassarche salvini (Salvin's Albatross)	Vulnerable, Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
Turnix melanogaster (Black-breasted Button-quail)	Vulnerable	Rainforest, Open forest and woodland areas containing a thick understory layer. Known to associated with thickest of *Lantana camara*	Unlikely, suitable habitat absent from Project area
Fish			
Epinephelus daemelii (Black Rockcod)	Vulnerable	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Maccullochella peelii (Murray Cod)	Vulnerable	Larger rivers within the Murray Darling Drainage system	Absent, outside of the known range for this species
Insects			
Argynnis hyperbius inconstans (Australian Fritillary)	Critically endangered	The Australian fritillary is restricted to areas where its larval food plant, *Viola betonicifolia* (the arrowhead violet), occurs.	Unlikely, suitable habitat (ie the presence of the larvae food plant) is absent from Project area
Mammals			
Balaena glacialis australis (Southern Right Whale)	Endangered, Migratory	Pelagic species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Balaenoptera musculus (Blue whale)	Endangered, Migratory	Pelagic species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Chalinolobus dwyeri (Large-eared Pied Bat)	Vulnerable	Open Eucalypt forest and woodland	Unlikely, suitable habitat absent from Project area
Dasyurus hallucatus (Spot-tailed Quoll)	Endangered	Rainforest, open Eucalypt forest, woodland.	Unlikely, outside of the known range for this species

Scientific name (Common name)	Conservation status	Preferred habitat	Likelihood of occurrence
Eubalaena australis (Southern Right Whale)	Endangered	Pelagic species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Megaptera novaeangliae (Humpback Whale)	Vulnerable, Migratory	Pelagic species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Petauroides volans (Greater Glider)	Vulnerable	Open Eucalypt forest and woodland containing hollows of suitable size to act as refuge	Unlikely, suitable habitat absent from Project area
Phascolarctos cinereus (Koala)	Vulnerable	Open Eucalypt forest and woodland and isolated Eucalypt trees that constitute food	Unlikely, suitable habitat absent from Project area
Potorous tridactylus tridactylus (Long-nosed Potoroo)	Vulnerable	Variety of habitats including rainforest, Eucalypt forest and heathland. An important feature is the presence of dense thickets that provide refuge	Unlikely, suitable habitat absent from Project area
Pteropus poliocephalus (Grey-headed Flying-fox)	Vulnerable	Areas containing flowering tress such as Eucalypts, Corymbia and fruiting trees such as Figs (Ficus). Will forage up to 40km from known camp sites	Unlikely, suitable habitat absent from Project area
Xeromys myoides (Water mouse)	Vulnerable	Inhabits the intertidal area associated with salt marsh, mangroves and areas below the HAT. Areas utilised are typically in a natural state.	Unlikely, suitable habitat absent from Project area
Reptiles			
Caretta caretta (Loggerhead Turtle)	Endangered, Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Chelonia mydas (Green Turtle)	Vulnerable, Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Delma torquata (Collared Delma)	Vulnerable	Grassland, Woodland with surface rocks, typically on igneous geology	Unlikely, suitable habitat absent from Project area
Dermochelys coriacea (Leatherback Turtle)	Endangered, Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Eretmochelys imbricate (Hawksbill Turtle)	Vulnerable, Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area

Scientific name (Common name)	Conservation status	Preferred habitat	Likelihood of occurrence
Lepidochelys olivacea (Olive Ridley Turtle)	Endangered, Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Natator depressus (Flatback Turtle)	Vulnerable	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Saiphos reticulatus (Three-toed Snake-tooth Skink)	Vulnerable	Rainforest and vine forest with a well-developed leaf litter layer	Unlikely, suitable habitat absent from Project area
Sharks			
Carcharias taurus (Grey Nurse Shark)	Critically Endangered	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Carcharodon carcharias (Great White Shark)	Vulnerable, Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Pristis zijsron (Green Sawfish)	Vulnerable, Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Rhincodon typus (Whale Shark)	Vulnerable, Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Migratory species			
Birds			
Anous stolidus (Common Noddy)	Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
***Apus pacificus* (Fork-tailed Swift)**	Migratory	Aerial species, hunts on the wing and rarely lands. Breeds in the northern hemisphere	**Likely**, this species may utilise airspace above the Project area. This species will not land within the Project area
Ardenna carneipes (Fleshy-footed Shearwater)	Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
Calonectris leucomelas (Streaked Shearwater)	Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
Fregata ariel (Lesser Frigatebird)	Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area
Fregata minor (Great Frigatebird)	Migratory	Pelagic species	Unlikely, suitable habitat absent from Project area

Scientific name (Common name)	Conservation status	Preferred habitat	Likelihood of occurrence
Sternula albifrons (Little Tern)	Migratory	Hunts over open water such as lakes, larger rivers, estuaries and the ocean	Unlikely, suitable habitat absent from Project area
Cuculus optatus (Oriental Cuckoo)	Migratory	Open forest, Woodland and scrublands	Unlikely, suitable habitat absent from Project area
***Hirundapus caudacutus* (White-throated Needletail)**	Migratory	Aerial species, hunts on the wing and rarely lands. Breeds in the northern hemisphere	**Likely**, this species may utilise airspace above the Project area. This species will not land within the Project area
Monarcha melanopsis (Black-faced Monarch)	Migratory	Rainforest, open forest, Woodland and scrublands, particularly along drainage lines	Unlikely, suitable habitat absent from Project area
Monarcha trivirgatus (Spectacled Monarch)	Migratory	Rainforest, open forest, Woodland and scrublands, particularly along drainage lines	Unlikely, suitable habitat absent from Project area
Myiagra cyanoleuca (Satin Flycatcher)	Migratory	Rainforest, open forest, Woodland and scrublands, particularly along drainage lines	Unlikely, suitable habitat absent from Project area
Rhipidura rufifrons (Rufous Fantail)	Migratory	Rainforest, open forest, Woodland and scrublands, particularly along drainage lines	Unlikely, suitable habitat absent from Project area
***Actitis hypoleucos* (Common Sandpiper)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Arenaria interpres* (Ruddy Turnstone)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Calidris acuminata* (Sharp-tailed Sandpiper)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Calidris alba* (Sanderling)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Calidris melanotos* (Pectoral Sandpiper)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Calidris ruficollis* (Red-necked Stint)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area

Scientific name (Common name)	Conservation status	Preferred habitat	Likelihood of occurrence
***Charadrius bicinctus* (Double-banded Plover)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Charadrius veredus* (Oriental Plover)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Gallinago hardwickii* (Latham's Snipe)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Gallinago megala* (Swinhoe's Snipe)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Gallinago stenura* (Pin-tailed Snipe)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Limicola falcinellus* (Broad-billed Sandpiper)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Limnodromus semipalmatus* (Asian Dowitcher)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Limosa lapponica* (Bar-tailed godwit)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Limosa limosa* (Black-tailed Godwit)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Numenius minutus* (Little curlew)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Numenius phaeopus* (Whimbrel)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
Pandion haliaetus (Osprey)	Migratory	Large lakes, waterbodies and the ocean	**Possible** – suitable roosting habitat may exist within the Project area

Scientific name (Common name)	Conservation status	Preferred habitat	Likelihood of occurrence
***Philomachus pugnax* (Ruff)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Pluvialis fulva* (Pacific Golden Plover)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Pluvialis squatarola* (Grey Plover)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Tringa brevipes* (Grey-tailed Tattler)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Tringa glareola* (Wood Sandpiper)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Tringa incana* (Wandering Tattler)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Tringa nebularia* (Common Greenshank)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Tringa stagnatilis* (Marsh Sandpiper)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
***Xenus cinereus* (Terek Sandpiper)**	Migratory	Estuarine and marine wetlands, drainage lines and mudflats. High tide roosts may be located in areas above the Highest Astronomical Tide level	**Possible** – suitable roosting habitat may exist within the Project area
Mammals			
Balaenoptera edeni (Bryde's Whale)	Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Dugong dugon (Dugong)	Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area

Scientific name (Common name)	Conservation status	Preferred habitat	Likelihood of occurrence
Orcaella heinsohni (Australian Snubfin Dolphin)	Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Orcinus orca (Killer Whale)	Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Sousa chinensis (Indo-Pacific Humpback Dolphin)	Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Fish			
Lamna nasus (Mackerel Shark)	Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Manta alfredi (Reef Manta Ray)	Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area
Manta birostris (Giant Manta Ray)	Migratory	Aquatic marine species	Absent, aquatic marine areas that are accessible by this species are not present within the Project area

As a result of the potential presence of the 39 MNES identified as potentially occurring within the Project area (refer Table 1.1), a self-assessment of the Project's potential impacts upon the identified MNES is required.

This self-assessment of the Project activities against the MNES identified as potentially occurring within the Project area, has been undertaken to assist in the determination of the applicability and need for submitting a referral to the Department of Environment and Energy (DoEE) for a decision by the Australian Government Environment Minister, on whether assessment and approval is required under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act).

This report documents the self-assessment process for the MNES that have been identified as having potential to occur within areas that are proposed to be disturbed as part of the proposed Project activities. This report provides an assessment of significance of each MNES designation in accordance with DoEE's *Matters of National Environmental Significance; Significant impact guidelines 1.1 – Environment Protection and Biodiversity Conservation Act 1999* (DoE 2014a) (henceforth referred to as 'the MNES guidelines') and *Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies; Significant impact guidelines 1.2 – Environment Protection and Biodiversity Conservation Act 1999* (DoE 2014b) (henceforth referred to as 'the Commonwealth guidelines').

2 Assessment of potential impacts

2.1 Background

Under the EPBC Act, an action will require approval from the Environment Minister if the action has, will have, or is likely to have, a significant impact on a MNES.

In addition, under the EPBC Act, approval from the Minister is required for:

1. **An action taken by any person on Commonwealth land** that is likely to have a significant impact on the environment (subsection 26(1) of the EPBC Act).
2. **An action taken by any person outside of Commonwealth land** that is likely to have a significant impact on the environment on Commonwealth land (subsection 26(2) of the EPBC Act).
3. **An action taken by a Commonwealth agency anywhere in the world** that is likely to have a significant impact on the environment (section 28 of the EPBC Act).

To this end, the Australian Government (i.e. DoEE) has prepared the MNES guidelines and Commonwealth guidelines to assist in the determination of the applicability and need for submitting a referral to DoEE in relation to MNES and Commonwealth Land.

The 'significant impact criteria', contained within the MNES guidelines is specific for each category of MNES, and is intended to assist in the determination of whether the potential impacts of the proposed action are likely to be significant impacts on the specific MNES.

In the current context, an action will require approval if the action has, will have, or is likely to have a significant impact on MNES species listed in any of the following categories:

- Critically endangered and Endangered
- Vulnerable
- Migratory

Further, the four steps to the self-assessment as detailed in the Commonwealth guideline are addressed in this document.

The self-assessment process associated with MNES identified in Table 1.1 as having potential to occur within the Project area has been structured into the following categories:

- Critically endangered and Endangered species (refer Section 2.2)
- Vulnerable species (refer Section 2.3)
- Migratory species (refer Section 2.4)
- Commonwealth Land (Section 2.5)

2.2 Preliminary significant impact assessment for Critically endangered and Endangered species

2.2.1 Background

Eight critically endangered/endangered species have been identified as potentially occurring within the Project area (refer Table 2.1). Whilst these species were not identified during Project field investigations, a precautionary approach to their presence has been applied, based on the availability of suitable habitat within the Project area. A brief discussion related to the ecology of each of the species identified in Table 2.1 is provided below.

Table 2.1 Endangered species identified as potentially occurring within the Project area

Scientific name (Common name)	Conservation status
Fauna – 8 MNES	
Birds	
Botaurus poiciloptilus (Australasian bittern)	Endangered
Calidris canutus (Red knot)	Endangered
Calidris ferruginea (Curlew sandpiper)	Critically endangered
Calidris tenuirostris (Great knot)	Critically endangered
Charadrius mongolus (Lesser Sand Plover)	Endangered
Limosa lapponica menzbieri (Bar-tailed godwit)	Critically endangered
Numenius madagascariensis (Eastern curlew)	Critically endangered
Rostratula australis (Australian painted-snipe)	Endangered

Botaurus poiciloptilus (Australasian bittern)

The Australasian bittern is a secretive, stocky, heron-like bird, living in wetlands where it forages. Bitterns are very well camouflaged and can be difficult to spot in the reeds and rushes. On occasion they will even sway in time with reeds to blend into their surroundings. The distinctive booming call of males gives them away (DoEE 2019a).

In Queensland, the species occurs as far north as Yeppoon and west to Wyandra. In the south-east, there is habitat remaining on Fraser Island, the Fraser Coast, North Stradbroke Island, Redlands and out into the Lockyer Valley. Key areas in Queensland where the species has been reliability seen in the past include the floodplains south of Byfield State Forest, Garnett's Lagoon and Lake Clarendon (DoEE 2019a).

The Australasian bittern is generally solitary, but sometimes occurs in pairs or dispersed aggregations of up to 12 birds. While the Australasian bittern was previously thought to be largely sedentary, recent tracking studies have shown extensive movements (over hundreds of kilometres) between wetlands in south-east Australia (DoEE 2019a).

The Australasian bittern occurs mainly in freshwater wetlands and, rarely, in estuaries or tidal wetlands. It favours wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds (e.g. Phragmites, Cyperus, Eleocharis, Juncus, Typha, Baumea, Bolboschoenus) or cutting grass (Gahnia) growing over a muddy or peaty substrate. The diet of the Australasian bittern includes aquatic animals such as small fish, frogs, freshwater crayfish, spiders, insects and small reptiles (DoEE 2019a).

The Australasian bittern breeds from October to February in solitary pairs. However, sometimes several nests may be placed in close proximity to each other. The species nests adjacent to relatively deep, densely vegetated freshwater swamps and pools, building its nests under dense cover over shallow water. The species prefers to nest in vegetation that is up to 2.5 m tall and the nests are placed about 30 cm above the water level. The nest is a shallow structure of dry or green reeds, within a clump of reeds in water or a

swamp and is built on a platform of bent-over reeds. Several females will nest within one male's territory. In rushes, it may avoid breeding in the densest areas. If population densities are high, it may resort to open wetlands for nesting, such as in stunted Acacia swamps. Clutch size is usually four or five, but ranges from three to six (DoEE 2019a).

The Australasian bittern has primarily been impacted by the loss of wetland habitat through the diversion of water away from wetlands; drainage of swamps; and clearing for urban and agricultural development (DoEE 2019a).

Calidris canutus (Red knot)

The Red knot is a small to medium member of the *Calidridinae* family. It has a length of 23 to 25 cm, a wingspan of 45 to 54 cm and a weight of 120 g. The species is robust, short-necked, rather dumpy but long bodied wader with a short straight bill, long wings extending beyond the tail and short legs. The Red knot is similar in shape and proportions to Great knot, Calidris tenuirostris, but smaller and less bulky, with shorter bill, and the breeding plumage differs markedly. In all plumages the species has a clear narrow white wing bar and off-white patch on the rump and upper tail-coverts (DoEE 2019b).

The Red knot is common in all the main suitable habitats around the coast of Australia but is less numerous in south-west Australia than elsewhere. Very large numbers are regularly recorded in north-west Australia. The only places it is not found in significant numbers are the northern part of the Great Australian Bight in South Australia and Western Australia, and along much of the NSW coast, where wader habitat is rather scarce (DoEE 2019b). The Red knot breeds in North America, Russia, north-west and east Greenland, north Alaska round the Seward Peninsula, the De Long Mountains and, rarely, at Point Barrow and Cooper Island (DoEE 2019b).

In Australasia the Red knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs. They are occasionally seen on terrestrial saline wetlands near the coast, such as lakes, lagoons, pools and pans, and recorded on sewage ponds and saltworks, but rarely use freshwater swamps. They rarely use inland lakes or swamps (DoEE 2019b)

Calidris ferruginea (Curlew sandpiper)

The Curlew sandpiper is a small, slim sandpiper 18–23 cm long and weighing 57 g, with a wingspan of 38 to 41 cm. The legs and neck are long. The bill is also long and is decurved with a slender tip. The bill is black, sometimes with a brown or green tinge at the base. The head is small and round, and the iris is dark brown. The legs and feet are black or black-grey. When at rest, the wing-tips project beyond the tip of the tail. The sexes are similar, but females have a slightly larger and longer bill and a slightly paler underbelly in breeding plumage (DoEE 2019c)

In Australia, Curlew sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states during the non-breeding period, and also during the breeding season when many non-breeding first year birds remain in Australia rather than migrating north. In Queensland, scattered records occur in the Gulf of Carpentaria, with widespread records along the coast south of Cairns. (DoEE 2019c).

Curlew sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters (DoEE 2019c)

Calidris tenuirostris (Great knot)

The Great knot is the largest of the calidrid birds and grows to 26 to 28 cm long, with a wingspan of approximately 58 cm. Females are slightly larger than males. The bill is black, and slightly downward curved and tinged green at the tip. The eye is brown, legs and feet dark greenish-grey. The bird has noticeable breeding, non-breeding and juvenile plumages (DoEE 2019d).

The Great knot has been recorded around the entirety of the Australian coast, with a few scattered records inland. It is now absent from some sites along the south coast where it used to be a regular visitor. The greatest numbers are found in northern Australia; where the species is common on the coasts of the Pilbara and Kimberley, from the Dampier Archipelago to the Northern Territory border, and in the Northern Territory from Darwin and Melville Island, through Arnhem Land to the south-east Gulf of Carpentaria (DoEE 2019d).

In Australasia, the species typically prefers sheltered coastal habitats, with large intertidal mudflats or sandflats. This includes inlets, bays, harbours, estuaries and lagoons. They are occasionally found on exposed reefs or rock platforms, shorelines with mangrove vegetation, ponds in saltworks, at swamps near the coast, salt lakes and non-tidal lagoons. The Great knot rarely occurs on inland lakes and swamps. The Great knot roosts in large groups in open areas, often at the water's edge or in shallow water close to feeding grounds. It is known that in hot conditions, waders prefer to roost where a damp substrate lowers the local temperature (Rogers 1999b). A group of approximately 8610 birds have been recorded roosting at an inland claypan near Roebuck Bay in north-west Western Australia (DoEE 2019d)

Charadrius mongolus (Lesser sand plover)

The Lesser sand plover is a small to medium-sized grey-brown and white plover which has a dark eye-stripe and which reaches 18 to 21 cm in length and 56 to 71 g in weight. Sexes differ when in breeding plumage, but are inseparable when in non-breeding plumage. Juveniles are distinguishable DoEE 2019e).

Within Australia, the Lesser sand-plover is widespread in coastal regions, and has been recorded in all states. It mainly occurs in northern and eastern Australia, in south-eastern parts of the Gulf of Carpentaria, western Cape York Peninsula and islands in Torres Strait, and along the entire east coast, though it occasionally also occurs inland. It is most numerous in Queensland and NSW. The species does not breed in Australia. (DoEE 2019e).

In Australia, this species usually occurs in coastal littoral and estuarine environments. It inhabits large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops. It also sometime occurs in short saltmarsh or among mangroves. The species roost near foraging areas, on beaches, banks, spits and banks of (DoEE 2019e).

Limosa lapponica menzbieri (Bar-tailed godwit)

The Bar-tailed godwit is a large migratory shorebird. It has a length around 37 to 39 cm, a wingspan of 62 to 75 cm and body mass between 250 to 450 g. It has a long neck with a very long upturned bill which is characterized by a dark tip and pinkish base. All non-breeding plumages have a uniform upper pattern, with a dark back and upper rump. It is distinguishable from other godwits by the dark barring on the lower white rump, upper-tail and lining of the underwing (DoEE 2019f).

The Bar-tailed godwit has been recorded in the coastal areas of all Australian states. It is widespread in the Torres Strait and along the east and south-east coasts of Queensland, NSW and Victoria. In Tasmania, the Bar-tailed godwit has mostly been recorded on the south-east coast. In South Australia it has mostly been recorded around coasts from Lake Alexandrina to Denial Bay. In Western Australia it is widespread around the coast, from Eyre to Derby. Populations have also been recorded in the northern Australia, from Darwin east to the Gulf of Carpentaria. The Bar-tailed godwit does not breed in Australia (DoEE 2019f).

The Bar-tailed godwit usually forages near the edge of water or in shallow water, mainly in tidal estuaries and harbours. They prefer exposed sandy or soft mud substrates on intertidal flats, banks and beaches. The Bar-tailed godwit usually roosts on sandy beaches, sandbars, spits and also in near-coastal saltmarsh (DoEE 2019f).

Numenius madagascariensis (Eastern curlew)

The Eastern curlew is the largest migratory shorebird in the world, with a long neck, long legs, and a very long downcurved bill. The wingspan is 110 cm and the birds weigh approximately 900 g. The head and neck are dark brown and streaked with darker brown. The chin and throat are whitish and there is a prominent white eye-ring; the iris is dark brown. The feathers of the upper parts of the body are brown, with blackish centres, and have broad pale rufous or olive brown edges or notches. The tail is grey-brown with narrow dark banding on the feathers. The underside of the bird is dark brownish-buff, becoming paler on the rear belly. There is fine dark brown streaking on the fore-neck and breast, which becomes thicker arrow-shaped streaks and barring on the fore-flanks. The upper belly and rear flanks have finer and sparser dark streaking. The underneath of the wing is whitish, but appears darker due to fine dark barring. The bill is dark brown with a pinkish base and the legs and feet are blue-grey. The female is slightly larger than the male with noticeably longer bill (DoEE 2019g).

Within Australia, the Eastern curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. Eastern curlews are rarely recorded inland. They have a continuous distribution from Barrow Island and Dampier Archipelago, Western Australia, through the Kimberley and along the Northern Territory, Queensland, and NSW coasts and the islands of Torres Strait. They are patchily distributed elsewhere. The eastern curlew does not breed in Australia (DoEE 2019g).

The Eastern curlew mainly forages during on soft sheltered intertidal sandflats or mudflats, open and without vegetation or covered with seagrass, often near mangroves, on saltflats and in saltmarsh, rockpools and among rubble on coral reefs, and on ocean beaches near the tideline. The birds are rarely seen on near-coastal lakes or in grassy areas. Birds roost during high tide periods on sandy spits, sandbars and islets, especially on beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves. They occasionally roost on reef-flats, in the shallow water of lagoons and other near-coastal wetlands. (DoEE 2019g).

Rostratula australis (Australian painted-snipe)

The Australian painted-snipe is a stocky wading bird around 220 to 250 mm in length with a long pinkish bill. The adult female, more colourful than the male, has a chestnut-coloured head, with white around the eye and a white crown stripe, and metallic green back and wings, barred with black and chestnut. There is a pale stripe extending from the shoulder into a V down its upper back. The adult male is similar to the female, but is smaller and duller with buff spots on the wings and without any chestnut colouring on the head, nape or throat (DoEE 2019h).

The Australian painted-snipe has been recorded at wetlands in all states of Australia and is most common in eastern Australia, where it has been recorded at scattered locations throughout much of Queensland, NSW, Victoria and south-eastern South Australia. It has been recorded less frequently at a smaller number of more scattered locations farther west in South Australia, the Northern Territory and Western Australia. It has also been recorded on single occasions in south-eastern Tasmania and at Lord Howe Island (DoEE 2019h).

The Australian painted-snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum Muehlenbeckia or canegrass or sometimes tea-tree (Melaleuca). The Australian Painted Snipe sometimes utilises areas that are lined with trees, or that have some scattered fallen or washed-up timber (DoEE 2019h).

The Australian painted-snipe breeding habitat requirements may be quite specific: shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby. Nest records are all, or nearly all, from or near small islands in freshwater wetlands, provided that these islands are a combination of very shallow water, exposed mud, dense low cover and sometimes some tall dense cover (DoEE 2019h).

2.2.2 Assessment of significance

Significant impact criteria for critically endangered and endangered species are provided in the MNES guidelines. These criteria dictated that an action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- Lead to a long-term decrease in the size of a population
- Reduce the area of occupancy of the species
- Fragment an existing population into two or more populations
- Adversely affect habitat critical to the survival of a species
- Disrupt the breeding cycle of a population
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat
- Introduce disease that may cause the species to decline, or
- Interfere with the recovery of the species.

An assessment of potential impacts to the endangered species identified in Table 2.1 in relation to the assessment of significance criteria presented above, is presented in Table 2.2.

Table 2.2 Assessment of the Project against the significant impact criteria in relation to the endangered flora and fauna

Significant impact criteria	Predicted impacts to endangered species
Lead to a long-term decrease in the size of a population	Vegetation has previously been cleared from the Project area which has been subject to bulk earthworks to facilitate future development of the site. The Project area does not currently support any resident flora, fauna or ecological communities. It is proposed that the Project area will be developed to comprise a combination of hardstand, landscaped areas and a performance track. New landscaped areas will be provided as part of the development, which will be designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. Potential habitat may be present within the Project area in the form of aquatic macrophytes that may have re-established following initial clearing (i.e. potential habitat for the Australasian bittern), and areas of dry land immediately above HAT (i.e. potential high-tide roosts for marine waders). However, these areas of potential habitat are considered to be sub-optimal when compared to available habitat areas located in proximity to the Project area. Historic field investigations have not identified the presence of any species listed in Table 2.1. It is therefore assumed that if the species do occur within the Project area, their densities will be very low. As such, it is not expected that the proposed Project works will lead to a long-term decrease in the size of the population of any species identified in Table 2.1.
Reduce the area of occupancy of the species	Vegetation has previously been cleared from the Project area which has been subject to bulk earthworks under the endorsed Environmental Assessment Report (EAR) to facilitate future development of the area. The Project area does not currently support any resident flora, fauna or ecological communities. Whist potential habitat may be present within the Project area in the form of aquatic macrophytes that may have re-established following initial clearing and bulk earthworks (ie potential habitat for the Australasian bittern), and areas of dry land immediately above HAT (ie potential high-tide roosts for marine waders) these areas of potential habitat are considered sub-optimal in nature (i.e. have resulted from anthropogenic activities). Historic field investigations did not identify the presence of any species listed in Table 2.1. It is therefore assumed that if the species do still occur within the Project area, their densities will be very low. As such, it is not expected that the proposed Project works will lead to a long-term decrease in the size of the population of any species identified in Table 2.1.

Significant impact criteria	Predicted impacts to endangered species
Fragment an existing population into two or more populations	Given the nature of works, the marginal habitat present within the Project area and the highly vagile nature of the species identified in Table 2.1, the proposed Project works will not fragment an existing population into two or more populations.
Adversely affect habitat critical to the survival of a species	Habitat identified within the Project area has not been identified to be critical to the survival of any species listed in Table 2.1. Therefore, the proposed Project works will not adversely affect habitat critical to the survival of a species.
Disrupt the breeding cycle of a population	The proposed Project works will not disrupt the breeding cycle of a population of any species listed in Table 2.1. Except for the Australasian bittern and the Australian painted-snipe, all of the species listed in Table 2.1 do not breed within Australia.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Within the Project area, habitat for species listed in Table 2.1 is typically in poor condition and considered to be marginal in nature. Therefore, the Project will not modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species listed in Table 2.1 are likely to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	The Project area has previously been cleared of vegetation under the endorsed EAR. It is proposed that the Project area will be developed to comprise a combination of hardstand, landscaped areas and a performance track. New landscaped areas will be provided as part of the development, which will be designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. These areas will be managed to ensure that invasive species do not become established to the extent that they will become harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.
Introduce disease that may cause the species to decline	The propose Project works are not likely to introduce disease that may cause species listed in Table 2.1 to decline.
Interfere with the recovery of the species	The proposed Project works will not interfere with the recovery of the species listed in Table 2.1.

2.2.3 Determination of assessed significance

Project works within the Project area will result in the construction of a combination of hardstand, landscaped areas and a performance track. New landscaped areas will be provided as part of the development, which will be designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. Potential habitat for the species listed in Table 2.1 is considered to be in poor condition and has resulted from anthropogenic activities. With reference to Table 2.2, the modification of this habitat has been identified as being unlikely to result in a significant impact to the critically endangered and endangered species listed in Table 2.1 and indicates that an EPBC Act referral for the Project in relation to impacts upon endangered species is **not recommended.**

2.3 Preliminary significant impact assessment for Vulnerable species

2.3.1 Background

Two vulnerable species have been identified as potentially occurring within the Project area (refer Table 2.3). Whilst these species were not identified during Project field investigations, a precautionary approach to their presence has been applied, based on the availability of suitable habitat within the Project area. A brief discussion related to the ecology of each of the species identified in Table 2.3 is provided below.

Table 2.3 Vulnerable species identified as potentially occurring within the Project area

Scientific name (Common name)	Conservation status
Fauna – 2 MNES	
Birds	
Charadrius leschenaultii (Greater sand plover)	Vulnerable
Limosa lapponica baueri (Bar-tailed godwit)	Vulnerable

Charadrius leschenaultii (Greater sand plover)

The Greater sand plover is a medium-sized (length: 22 to 25 cm; weight 75 to 100 g) brown-and-white plover. Sexes differ when in breeding plumage, but are inseparable when in non-breeding plumage; juveniles are also separable from adults (DoEE 2019i)

In Australia, the Greater sand plover occurs in coastal areas in all states, though the greatest numbers occur in northern Australia, especially the north-west. In northern Australia, the species is especially widespread between North West Cape and Roebuck Bay in Western Australia; there are sparsely scattered records from the largely inaccessible area between Roebuck Bay and Darwin, but it often occurs in the Top End of the Northern Territory, including on Groote Eylandt. It is also abundant in south-eastern parts of the Gulf of Carpentaria in Queensland, and is widespread from the Torres Strait, along the eastern coast, into the Northern Rivers region of northern NSW, with occasional records south to about Shoalhaven Heads. The species does not breed in Australia (DoEE 2019i).

The species is almost entirely coastal in distribution, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons. They seldom occur in shallow freshwater wetlands. The species typically roosts on sand-spits and banks on beaches or in tidal lagoons, and occasionally on rocky points, or in adjacent areas of saltmarsh or claypans. They tend to roost further up the beach than other waders, sometimes well above high-tide mark (DoEE 2019i).

Limosa lapponica baueri (Bar-tailed godwit)

The Bar-tailed godwit is a large migratory shorebird. It has a length around 37 to 39 cm, a wingspan of 62 to 75 cm and body mass between 250 to 450 g. It has a long neck with a very long upturned bill which is characterized by a dark tip and pinkish base. All non-breeding plumages have a uniform upper pattern, with a dark back and upper rump. It is distinguishable from other godwits by the dark barring on the lower white rump, upper-tail and lining of the underwing. The sexes differ with females being larger and with longer bills than males and having a duller breeding plumage. Males and females exhibit marked variation in plumages with males having a deep rufous head and neck. Juveniles are similar to non-breeding adults with the exception that the crown is more heavily streaked (DoEE 2019j).

The Bar-tailed godwit has been recorded in the coastal areas of all Australian states. It is widespread in the Torres Strait and along the east and south-east coasts of Queensland, NSW and Victoria. In Tasmania, the Bar-tailed godwit has mostly been recorded on the south-east coast. In South Australia it has mostly been recorded around coasts from Lake Alexandrina to Denial Bay. In Western Australia it is widespread around

the coast, from Eyre to Derby. Populations have also been recorded in the northern Australia, from Darwin east to the Gulf of Carpentaria. The Bar-tailed godwit does not breed in Australia (DoEE 2019j).

The Bar-tailed godwit usually forages near the edge of water or in shallow water, mainly in tidal estuaries and harbours. They prefer exposed sandy or soft mud substrates on intertidal flats, banks and beaches. The Bar-tailed godwit usually roosts on sandy beaches, sandbars, spits and also in near-coastal saltmarsh (DoEE 2019j).

2.3.2 Assessment of significance

Significant impact criteria for vulnerable species are provided in the MNES guidelines. These criteria dictated that an action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- Lead to a long-term decrease in the size of an important population of a species
- Reduce the area of occupancy of an important population
- Fragment an existing important population into two or more populations
- Adversely affect habitat critical to the survival of a species
- Disrupt the breeding cycle of an important population
- Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat
- Introduce disease that may cause the species to decline, or
- Interfere substantially with the recovery of the species.

An assessment of potential impacts to the vulnerable species identified in Table 2.3 in relation to the assessment of significance criteria presented above, is presented in Table 2.4.

Table 2.4 Assessment of the Project against the significant impact criteria in relation to the Vulnerable flora and fauna

Significant impact criteria	Predicted impacts to vulnerable species
Lead to a long-term decrease in the size of an important population of a species	Vegetation has previously been cleared from the Project area which has been subject to bulk earthworks to facilitate future development of the area under the endorsed EAR. The Project area does not currently support any resident flora, fauna or ecological communities. It is proposed that the Project area will be developed to comprise a combination of hardstand, landscaped areas and a performance track. New landscaped areas will be provided as part of the development, which will be designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. Whist potential habitat may be present within the Project area in the form of areas of dry land immediately above HAT (i.e. potential high-tide roosts for marine waders), this potential habitat is considered to be sub-optimal when compared to available habitat areas located in proximity to the Project area. Historic field investigations did not identify the presence of any species listed in Table 2.3. It is therefore assumed that if the species do occur within the Project area, their densities will be very low. As such, it is not expected that the proposed Project works will lead to a long-term decrease in the size of an important population of any species identified in Table 2.3.

Significant impact criteria	Predicted impacts to vulnerable species
Reduce the area of occupancy of an important population	Vegetation has previously been cleared from the Project area which has been subject to bulk earthworks to facilitate future development of the area. The Project area does not currently support any resident flora, fauna or ecological communities. Whist potential habitat may be present within the Project area in the form of aquatic macrophytes that may have re-established following initial clearing and bulk earthworks (ie potential habitat for the Australasian bittern), and areas of dry land immediately above HAT (ie potential high-tide roosts for marine waders) these areas of potential habitat are considered sub-optimal in nature (i.e. have resulted from anthropogenic activities). Historic field investigations did not identify the presence of any species listed in Table 2.3. It is therefore assumed that if the species do occur within the Project area, their densities will be very low. As such, it is not expected that the proposed Project works will lead to a long-term decrease in the size of an important population of any species identified in Table 2.3.
Fragment an existing important population into two or more populations	Given the nature of works, the marginal habitat present within the Project area and the highly vagile nature of the species identified in Table 2.3, the proposed Project works will not fragment an existing important population into two or more populations.
Adversely affect habitat critical to the survival of a species	Habitat identified within the Project area has not been identified to be critical to the survival of any species listed in Table 2.3. Therefore, the proposed Project works will not adversely affect habitat critical to the survival of a species.
Disrupt the breeding cycle of an important population	The proposed Project works will not disrupt the breeding cycle of an important population of any species listed in Table 2.3 as they do not breed within Australia.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Within the Project area, habitat for species listed in Table 2.3 is typically in poor condition and considered to be marginal in nature. Therefore, the Project will not modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species listed in Table 2.3 are likely to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	The Project area has previously been cleared of vegetation. It is proposed that the Project area will be developed to comprise a combination of hardstand, landscaped areas and a performance track. New landscaped areas will be provided as part of the development, which will be designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. These areas will be managed to ensure that invasive species do not become established to the extent that they will become harmful to a critically endangered or endangered species becoming established in the vulnerable species' habitat.
Introduce disease that may cause the species to decline	The propose Project works are not likely to introduce disease that may cause species listed in Table 2.3 to decline.
Interfere substantially with the recovery of the species	The proposed Project works will not interfere with the recovery of the species listed in Table 2.3.

2.3.3 Determination of assessed significance

Project works within the Project area will result in the construction of a combination of hardstand, landscaped areas and a performance track. New landscaped areas will be provided as part of the development, which will be designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. Potential habitat for the species listed in Table 2.3 is considered to be in poor condition and has resulted from anthropogenic activities. With reference to Table 2.4, the modification of this habitat has been identified as being unlikely to result in a significant impact to the vulnerable species listed in Table 2.3 and indicates that an EPBC Act referral for the Project in relation to impacts upon endangered species is **not recommended.**

2.4 Preliminary Significant Impact Assessment for Migratory species

2.4.1 Introduction

Twenty-eight migratory species have been identified as potentially occurring within the Project area (refer Table 2.5). Whilst these species were not identified during field investigations, a precautionary approach to their presence has been applied, based on the availability of suitable habitat within the Project area. The species identified in Table 2.5 are highly vagile. With the exception of two aerial species (i.e. *Apus pacificus* and *Hirundapus caudacutus*), the identified migratory species typically associate with marine, estuarine and freshwater wetlands. These species are likely to utilise marine mudflat areas in the broader context of the Project area (i.e. mudflats that are subject to tidal inundation, located outside of the Project area). Portions of the Project area may potentially be used as high-tide roosts.

Table 2.5 Migratory species identified as potentially occurring within the Project area

Scientific name (Common name)	Conservation status
Migratory species – 28 MNES	
Birds	
Apus pacificus (Fork-tailed Swift)	Migratory
Hirundapus caudacutus (White-throated Needletail)	Migratory
Actitis hypoleucos (Common Sandpiper)	Migratory
Arenaria interpres (Ruddy Turnstone)	Migratory
Calidris acuminata (Sharp-tailed Sandpiper)	Migratory
Calidris alba (Sanderling)	Migratory
Calidris melanotos (Pectoral Sandpiper)	Migratory
Calidris ruficollis (Red-necked Stint)	Migratory
Charadrius bicinctus (Double-banded Plover)	Migratory
Charadrius veredus (Oriental Plover)	Migratory
Gallinago hardwickii (Latham's Snipe)	Migratory
Gallinago megala (Swinhoe's Snipe)	Migratory
Gallinago stenura (Pin-tailed Snipe)	Migratory
Limicola falcinellus (Broad-billed Sandpiper)	Migratory
Limnodromus semipalmatus (Asian Dowitcher)	Migratory
Limosa lapponica (Bar-tailed godwit)	Migratory
Limosa limosa (Black-tailed Godwit)	Migratory
Numenius minutus (Little curlew)	Migratory
Numenius phaeopus (Whimbrel)	Migratory
Philomachus pugnax (Ruff)	Migratory
Pluvialis fulva (Pacific Golden Plover)	Migratory
Pluvialis squatarola (Grey Plover)	Migratory
Tringa brevipes (Grey-tailed Tattler)	Migratory
Tringa glareola (Wood Sandpiper)	Migratory
Tringa incana (Wandering Tattler)	Migratory
Tringa nebularia (Common Greenshank)	Migratory
Tringa stagnatilis (Marsh Sandpiper)	Migratory
Xenus cinereus (Terek Sandpiper)	Migratory

2.4.2 Assessment of significance

Significant impact criteria for migratory species are provided in the MNES guidelines. These criteria dictated that an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species
- Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or
- Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species

An assessment of potential impacts to the migratory species identified in Table 2.5 in relation to the assessment of significance criteria presented above, is presented in Table 2.6.

Table 2.6 Assessment of the Project against the significant impact criteria in relation to the Vulnerable flora and fauna

Significant impact criteria	Predicted impacts to migratory species
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	Vegetation has previously been cleared from the Project area which has been subject to bulk earthworks to facilitate future development of the area under the endorsed EAR. The Project area does not currently support any resident flora, fauna or ecological communities. It is proposed that the Project area will be developed to comprise a combination of hardstand, landscaped areas and a performance track. New landscaped areas will be provided as part of the development, which will be designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. Whist potential habitat may be present within the Project area in the form of areas of dry land immediately above HAT (i.e. potential high-tide roosts for marine waders), this habitat potential is considered to be sub-optimal when compared to available habitat areas located in proximity to the Project area. The proposed works will not substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for any of the migratory species listed in Table 2.5.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	The proposed works will not result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for any of the migratory species listed in Table 2.5.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	The proposed works will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of any of the migratory species listed in Table 2.5.

2.4.3 Determination of assessed significance

Project works within the Project area will result in the construction of a combination of hardstand, landscaped areas and a performance track. New landscaped areas will be provided as part of the development, which will be designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. Potential habitat for the species listed in Table 2.5 is considered to be in poor condition and has resulted from anthropogenic activities. With reference to Table 2.6, the modification of this habitat has been identified as being unlikely to result in a significant impact to the migratory species listed in Table 2.5 and indicates that an EPBC Act referral for the Project in relation to impacts upon endangered species is **not recommended.**

2.5 Preliminary Significant Impact Assessment for Commonwealth land

2.5.1 Introduction

Project area as a whole, is contained within land managed by BAC. BAC is an "airport-lessee-company" under the *Airports Act 1996* (Airport Act) and all land under it management is owned by the Commonwealth of Australia. As such, the Project area is wholly contained within Commonwealth Land (refer Table 2.7).

Table 2.7 Commonwealth land occurring within the Project area

Feature	Conservation Status
Commonwealth Land	
Land managed by Brisbane Airport Corporation (BAC) – Project area and its surrounds	Protected

2.5.2 Assessment of significance

Significant impact assessment to assess the significance of Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies has four steps as outlined below:

- Step 1 – Determine the environmental context
- Step 2 – Determine the potential Impacts
- Step 3 – Identify the impact avoidance and mitigation strategies
- Step 4 – Assessment to determine if the impacts are significant

Each of the four stages of the assessment pathway have defined assessment criteria. An assessment of potential impacts to the Commonwealth land as identified in Table 2.7 in relation to the four impact assessment steps and their associated significance criteria is presented in Table 2.8.

Table 2.8 Assessment of the Project against the significant impact criteria in relation to the impacts to Commonwealth land

Self-assessment Step	Impact criteria	Response to impact criteria
Step 1 – Environmental context	What are the components or features of the environment in the area where the action will take place?	The Project area is contained within land managed by BAC and is Commonwealth Land. The Project area is approximately 51.3 ha in size and is bordered by Moreton Drive, Airport Drive and Nancy Bird Way.
	Which components or features of the environment are likely to be impacted?	Whist the Project area has been subject to anthropogenic activities including the clearing of vegetation and bulk earthworks, it has the potential to provide marginal habitat for conservation significant and migratory species as listed in Table 2.1, Table 2.3 and Table 2.5. Potential habitat afforded by the site includes high-tide marine wader roosts and drainage features containing aquatic macrophytes that may be used by the Australasian bittern and Australian painted-snipe.
	Is the environment which is likely to be impacted, or are elements of it, sensitive or vulnerable to impacts?	The areas that will be subject to impacts have resulted from anthropogenic activities and are widespread and abundant within the broader context of the Project area (ie. within the local region). As such, these areas are not sensitive to change.
	What is the history, current use and condition of the environment which is likely to be impacted?	Vegetation has previously been cleared from the Project area which has been subject to bulk earthworks to facilitate future development of the area. The Project area does not currently support any resident flora, fauna or ecological communities. The project area boundary and an image of its current condition is provided in Figure 1.1.

Self-assessment Step	Impact criteria	Response to impact criteria
Step 2 – Potential Impacts	What are the components of the action?	The proposed development involves the construction of the BNE Auto Mall on an unused 51.3 ha parcel of land bordered by Moreton Drive, Airport Drive and Nancy Bird Way. The BNE Auto Mall is set to be Australia's benchmark automotive precinct designed for new and used car buyers, motoring enthusiasts and the public. The development will include a diverse mix of uses such as: ▪ A range of commercial uses including, but not limited to, automotive retail dealerships, retail showrooms, and retail tenancies ▪ Dedicated manufacturers brand experience centres ▪ An automotive performance track, associated manoeuvring and handling courses, skidpan and 4WD testing circuit ▪ Track operations and management centre. The proposed BNE Auto Mall will comprise a combination of hardstand, landscaped areas and the performance track. New landscaped areas will be provided as part of the development, which will be designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. Landscape design will incorporate resilient, native species found within the airport's coastal setting that will not attract birds or flying foxes and, when fully mature, will not compromise operational airspace.
	What are the predicted adverse impacts associated with the action including indirect consequences?	The action will result in the removal or areas identified as potential, marginal habitat for conservation significant species and migratory species as listed in Table 2.1, Table 2.3 and Table 2.5.
	How severe are the potential impacts?	It is considered that given the highly disturbed nature of the Project area, the presence of similar habitat of higher quality within the broader context of the local area, and the relatively poor quality of habitat present within the Project area and the absence of direct sightings or indirect evidence of the species identified in Table 2.1, Table 2.3 and Table 2.5 on site, it is considered that the severity of the impacts will be very low to negligible.
	What is the extent of uncertainty about potential impacts?	In relation to the species as listed in Table 2.1, Table 2.3 and Table 2.5, it is certain that the project works will not result in a significant impact (refer Table 2.2, Table 2.4 and Table 2.6).
Step 3 – Impact avoidance and mitigation	Will any measures to avoid or mitigate impacts ensure, with a high degree of certainty, that impacts are not significant?	Vegetation has previously been cleared from the Project area which has been subject to bulk earthworks to facilitate future development of the area. The Project area does not currently support any resident flora, fauna or ecological communities. All potential habitat for species listed in Table 2.1, Table 2.3 and Table 2.5 has resulted though anthropogenic processes and it is not considered that further works will significantly impact upon species for which the site may potentially provide habitat (refer Table 2.2, Table 2.4 and Table 2.6).
Step 4 – Are the impacts significant	Considering all of the matters in steps 1 to 3 above, is the action likely to have a significant impact on the environment (confirmed against the significance criteria set out in these guidelines)?	In reference to Steps 1 to 3 above, and the information contained therein, it is considered that the action is not likely to have a significant impact on the environment.

2.5.3 Determination of assessed significance

Project works within the Project area will result modifications to Commonwealth Land. Modifications associated with the Project will include the construction of a combination of hardstand, landscaped areas and a performance track. New landscaped areas will be provided as part of the development, which will be

designed to satisfy the intent of the Brisbane Airport Landscape Setting Strategy 2018. Potential habitat for conservation significant species and migratory species is contained within the Project area. However, this habitat is considered to be in poor condition and has resulted from anthropogenic activities. With reference to Table 2.8, the modifications to Commonwealth Land has been identified as being unlikely to result in a significant impact and indicates that an EPBC Act referral for the Project in relation to impacts upon Commonwealth Land is **not recommended.**

3 Summary and conclusions

Aurecon has been commissioned by BAC to undertake a self-assessment for the construction and operation of the Auto Mall under the EPBC Act Significant Impact Guidelines.

Desktop review of MNES, derived from the EPBC Protected Matters Search Tool, 39 MNES have potential to occur based on the presence of preferred habitat within the Project area.

As a result of the presence or potential habitat of these MNES, an assessment of the Project's potential impacts upon these MNES was undertaken in accordance with the following guidelines:

- Department of Environment (2014a), *Matters of National Environmental Significance: Significant impact guidelines Version 1.1*
- Department of Environment (2014b), *Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies; Significant impact guidelines 1.2 – Environment Protection and Biodiversity Conservation Act 1999*.

This process allows documentation of the process used to assist in the determination of the applicability and need for submitting a referral to DoEE for a decision by the Australian Government Environment Minister, on whether assessment and controlled action approval is required under the EPBC Act.

Assessment of the potential impacts of the Project upon the identified MNES was undertaken in accordance with the relevant EPBC Act guidelines identified above.

Following the self-assessment process, it is considered that the proposed Project activities are not likely to result in significant impacts to critically endangered, endangered, vulnerable or migratory species as listed under the EPBC Act, or land owned by the Commonwealth of Australia.

It is therefore concluded that an EPBC Act referral for the Project in relation to impacts to MNES or land owned by the Commonwealth government is **not required.**

4 References

Brisbane Airport Corporation 2018, *Brisbane Airport – Landscape Setting Strategy*, Version 1.0, March 2018.

Department of Environment (2014a), *Matters of National Environmental Significance: Significant impact guidelines Version 1.1*, Accessed: June 2019.

Department of Environment (2014b), *Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies; Significant impact guidelines 1.2 – Environment Protection and Biodiversity Conservation Act 1999* Accessed: June 2019.

Department of Environment (2019a), Species Profile and Threats Database - *Botaurus poiciloptilus* (Australasian bittern). Accessed: June 2019.

Department of Environment (2019b), Species Profile and Threats Database - *Calidris canutus* (Red Knot). Accessed: June 2019.

Department of Environment (2019c), Species Profile and Threats Database - *Calidris ferruginea* (Curlew sandpiper). Accessed: June 2019.

Department of Environment (2019d), Species Profile and Threats Database - *Calidris tenuirostris* (Great Knot). Accessed: June 2019.

Department of Environment (2019e), Species Profile and Threats Database - *Charadrius mongolus* (Lesser Sand Plover). Accessed: June 2019.

Department of Environment (2019f), Species Profile and Threats Database - *Limosa lapponica menzbieri* (Bar-tailed Godwit). Accessed: June 2019.

Department of Environment (2019g), Species Profile and Threats Database - *Numenius madagascariensis* (Eastern Curlew). Accessed: June 2019.

Department of Environment (2019h), Species Profile and Threats Database - *Rostratula australis* (Australian Painted-snipe). Accessed: June 2019.

Department of Environment (2019i), Species Profile and Threats Database - *Charadrius leschenaultii* (Greater Sand Plover). Accessed: June 2019.

Department of Environment (2019j), Species Profile and Threats Database - Limosa lapponica baueri (Bar-tailed Godwit). Accessed: June 2019.

Appendix A
EPBC Protected Matters Search Tool results

Australian Government

Department of the Environment and Energy

EPBC Act Protected Matters Report

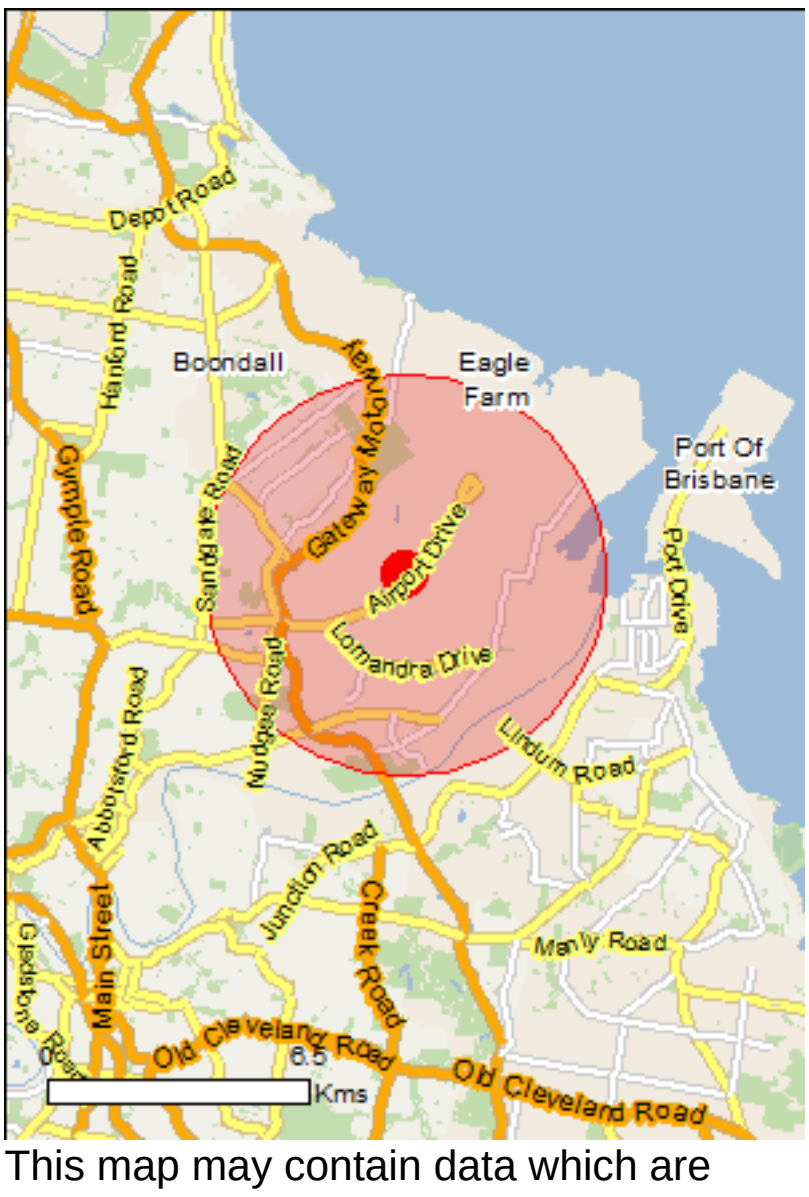
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 05/06/19 10:09:08

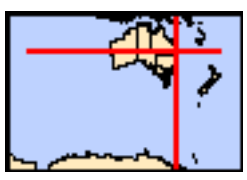
- Summary
- Details
  - Matters of NES
  - Other Matters Protected by the EPBC Act
  - Extra Information
- Caveat
- Acknowledgements



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates

Buffer: 5.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	25
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	67
Listed Migratory Species:	76

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	109
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	42
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Moreton bay	Within Ramsar site
Moreton bay	Within Ramsar site
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Listed Threatened Ecological Communities		[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.		
Name	Status	Type of Presence
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area

Name	Status	Type of Presence
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Poephila cincta cincta Southern Black-throated Finch [64447]	Endangered	Species or species habitat may occur within area
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area
Fish		
Epinephelus daemelii Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat may occur within area
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Insects		
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus tridactylus Long-nosed Potoroo (SE mainland) [66645]	Vulnerable	Species or species habitat may occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
Plants		
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area
Cryptocarya foetida Stinking Cryptocarya, Stinking Laurel [11976]	Vulnerable	Species or species habitat may occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat may occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat likely to occur within area
Macadamia ternifolia Small-fruited Queensland Nut, Gympie Nut [7214]	Vulnerable	Species or species habitat likely to occur within area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat likely to occur within area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area

Name	Status	Type of Presence
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Saiphos reticulatus Three-toed Snake-tooth Skink [88328]	Vulnerable	Species or species habitat may occur within area
Sharks		
Carcharias taurus (east coast population) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species

[Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or

Name	Threatened	Type of Presence
		related behaviour known to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur

Name	Threatened	Type of Presence
		within area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area

Name	Threatened	Type of Presence
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Roosting known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa incana Wandering Tattler [831]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Defence - BANYO STORES DEPOT
Defence - DAMASCUS BARRACKS - MEEANDAH

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Breeding likely to occur within area

Name	Threatened	Type of Presence
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Diomedea gibsoni Gibson's Albatross [64466]	Vulnerable*	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area

Name	Threatened	Type of Presence
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Roosting known to occur within area
Heteroscelus incanus Wandering Tattler [59547]		Roosting known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Roosting known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		Roosting known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting known to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area

Name	Threatened	Type of Presence
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Roosting known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area
Fish		

Name	Threatened	Type of Presence
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Campichthys tryoni Tryon's Pipefish [66193]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus kelloggi Kellogg's Seahorse, Great Seahorse [66723]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]		Species or species habitat likely to occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Micrognathus andersonii Anderson's Pipefish, Shortnose Pipefish [66253]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Micrognathus brevirostris thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
Microphis manadensis Manado Pipefish, Manado River Pipefish [66258]		Species or species habitat may occur within area
Solegnathus dunckeri Duncker's Pipehorse [66271]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammals		
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Reptiles		
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Laticauda laticaudata a sea krait [1093]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans [Resource Information]

Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Orcaella brevirostris Irrawaddy Dolphin [45]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted		Species or species

Name	Status	Type of Presence
Bottlenose Dolphin [68418] Tursiops truncatus s. str. Bottlenose Dolphin [68417]		habitat likely to occur within area Species or species habitat may occur within area

Extra Information

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Annona glabra Pond Apple, Pond-apple Tree, Alligator Apple, Bullock's Heart, Cherimoya, Monkey Apple, Bobwood, Corkwood [6311]		Species or species habitat may occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus africanus Climbing Asparagus, Climbing Asparagus Fern [66907]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Cryptostegia grandiflora Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda		Species or species habitat likely to occur

Name	Status	Type of Presence
[18913]		within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Hymenachne amplexicaulis Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass [31754]		Species or species habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Parthenium hysterophorus Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]		Species or species habitat likely to occur within area
Prosopis spp. Mesquite, Algaroba [68407]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat likely to occur within area

Nationally Important Wetlands	[Resource Information]
Name	State
Moreton Bay	QLD

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-27.40176 153.10386

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
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-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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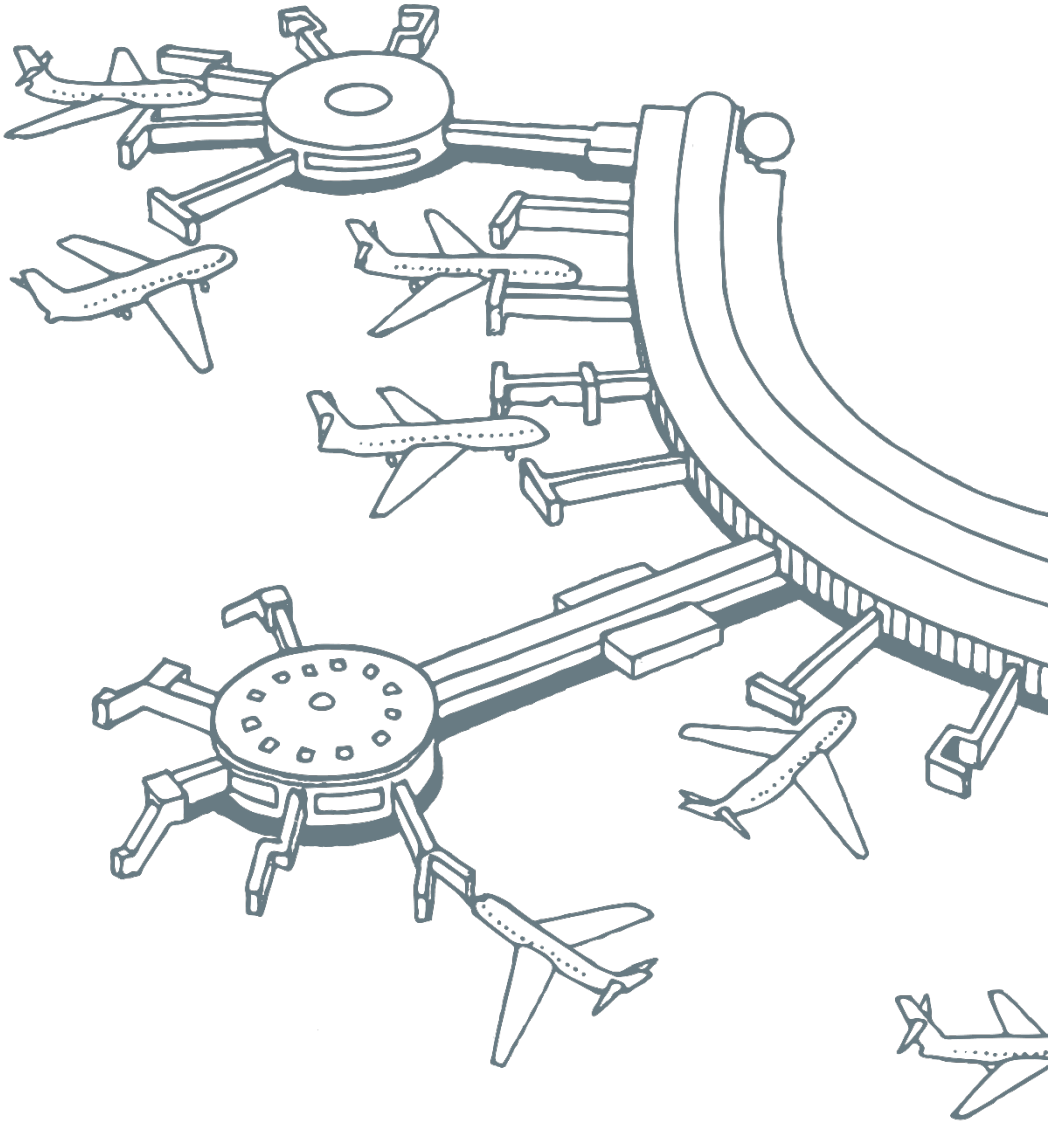
APPENDIX I
ACOUSTICS REPORT



BNE Auto Mall

Acoustic Assessment Report

Brisbane Airport Corporation

Reference: 503043

Revision: 3

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1 Introduction

1.1 Project overview

A draft Major Development Plan has been prepared for the construction and operation of the BNE Auto Mall (the Project) on an unused 51.3 ha parcel of land bordered by Moreton Drive, Airport Drive and Nancy Bird Way. The BNE Auto Mall is set to be Australia's benchmark automotive precinct designed for new and used car buyers, motoring enthusiasts and the public. The Project will include a diverse mix of uses such as:

- A performance track which includes a skid pan, kick plate, manoeuvring course, dedicated slalom area, 4WD test circuit, low friction handling circuit and associated driver trainer facilities;
- Flagship automotive dealerships;
- Brand experience centres; and
- Track operations and management centre.

The intention of the BNE Auto Mall is to operate day and night with hours ranging between 9 am to 10 pm, seven days a week, offering a variety of experiences and opportunities for both the visiting public as well as the on-site tenants and workers. The performance track is envisaged to host events such as:

- Corporate driving events;
- Shared test drive days;
- Motorbike days;
- Driver experience days;
- Driver training days;
- 4WD training days; and
- Special and major event days.

The automotive dealerships and brand experience centres are envisaged around the perimeter of the performance track to create a new landmark destination and generate significant economic and social activity for the Brisbane Airport and surrounding area.

1.2 Location of proposed development

The Project site is an unused 51.3 ha parcel of Brisbane Airport land bordered by Moreton Drive (west), Airport Drive (east) and Nancy Bird Way (north). Figure 1 shows the location of the Project site.

The Project site adjoins Kingsford Smith Memorial to the east (corner of Airport Drive and Nancy Bird Way) and is opposite the existing Brisbane Service Centre to the north-east as well as parking for the International Airport to the south-east.

Figure 1 Major Development Plan (MDP) Development Area

1.3 Objectives

This Acoustics Assessment Report provides a high-level assessment of the potential environmental noise impacts from the Project.

For the purpose of this assessment, the operation of the BNE Auto Mall includes the performance track, 4WD test circuit and skid pan. These operational activities have been divided into nine 'typical' scenarios. Each scenario has been assessed against the relevant noise level guidance and criteria to provide an understanding of the potential environmental noise impacts from the Project on nearby sensitive and commercial receptors.

2 Noise regulations

A range of Commonwealth and State regulations and policies related to noise were considered to determine appropriate noise criteria by which to assess potential environmental noise impacts associated with construction and operation of the Project.

2.1 Airport legislation

2.1.1 Airports (Environment Protection) Regulations 1997

Noise sources

Ground-based noise at Brisbane Airport other than noise generated by an aircraft in flight, when landing, taking off or taxiing at an airport, is regulated by the *Airports (Environment Protection) Regulations 1997* (AEPR). The ground-based noise sources surrounding the Project site have been identified in the *2014 Airport Environment Strategy* (AES) as the following:

- Road traffic and rail;
- Construction and development sites;
- Operation of plant or machinery;
- Operation of alarm or warning systems; and
- Aircraft engine ground running.

Commercial and Sensitive receptors

Under Part 2, Division 2, Section 2.04 of the AEPR, offensive noise is defined as:

> *(1) For these Regulations, noise that is offensive occurs when noise is generated at a volume, or in a way, or under a circumstance, that in the opinion of an airport environment officer, offensively intrudes on individual, community or commercial amenity.*
>
> *(2) In forming an opinion, an airport environment officer must have regard to:*
>
> *(a) the volume, tonality and impulsive character (if any) of the noise; and*
>
> *(b) the time of day, and duration, of the noise; and*
>
> *(c) background noise levels at the time the noise is generated; and*
>
> *(d) the location, in relation to the source of the noise, of:*
>
> *(i) sensitive receptors; or*
>
> *(ii) if there is no affected sensitive receptor — commercial receptors; and*
>
> *(e) the excessive noise guidelines in Schedule 4.*
>
> *(3) For subregulation (2):*
>
> ***commercial receptor** means a business operation, whether for profit, or not.*
>
> ***sensitive receptor** means:*
>
> *(a) a dwelling; or*
>
> *(b) an impermanent dwelling in a place designed, or reserved, for impermanent dwellings (for example, a caravan park or residential marina); or*
>
> *(c) a hotel, motel or hostel; or*

(d) a child care institution, kindergarten, school, college, university or other educational institution; or

(e) a hospital, medical centre or nursing home; or

(f) a building that is a church or similar place of worship.

Schedule 4, Part 3 of the AEPR makes reference to commercial receptors, and states that the indicators of noise for sensitive receptors are the same for commercial receptors except for considerations of the following factors:

- The nature of the business conducted at the site
- The time of day when the noise occurs
- The duration of the noise
- The nature and characteristics (if any) of the noise
- The background noise level

Relevance to the Project

The AEPR defines a number of sensitive receptors in close proximity to the Project site:

- The nearest residential receptors are located a significant distance from the Project site (approximately 2 km).
- The nearest existing hotel is the Novotel Hotel, located approximately 1.5km to the south west of the Project site.
- Neighbouring commercial receptors have been included in the assessment, in accordance with Schedule 4, Part 3 of the AEPR.

The impact of the Project on these receptors is discussed in 3.1 of this report.

2.1.2 Australian Standard AS 2021 – Acoustics Aircraft noise intrusion – building siting and construction

Summary

AS 2021-2015 defines the suitability of future development sites for various land uses based on the Australian Noise Exposure Forecast (ANEF) zoning procedure. The values from accompanying notes have been excluded.

Table 1 Building site acceptability based the relevant tables in the Standard are reproduced below. Building types not relevant to the Project, and the tables on ANEF zones - AS2021 Table 2.1

Building type	ANEF zone of site		
	Acceptable	Conditionally acceptable	Unacceptable
Commercial building	Less than 25 ANEF	25 – 35 ANEF	Greater than 35 ANEF

The standard specifies indoor design sound levels from aircraft noise for various types of buildings including commercial uses. It should be noted that under AS2021, a building site (which is assessed) is the location of a proposed or existing building not associated with the aerodrome, therefore the relevant indoor design sound levels are shown in Table 2 and may be used for indicative design criteria.

Table 2 Indoor design sound levels for determination of aircraft noise reduction - AS2021 Table 3.3

Building type and activity		Indoor design sound level*, dB(A)
Commercial buildings, offices and shops	Private offices, conference rooms	55
	Drafting, open offices	65
	Typing, data processing	70
	Shops, supermarkets, showrooms	75

*These indoor design sound levels are not intended to be used for measurement of adequacy of construction. For measurement of the adequacy of construction against aircraft noise intrusion, refer to Appendix D of AS 2021.

Relevance to the Project

- The proposed dealerships and brand experience centres are considered commercial uses.
- The proposed internal spaces of the dealerships and brand experience centres should be designed to the levels specified in Table 2.
- Indoor design sound levels for potential future development on the Project site will need to consider maximum measured noise levels from aircraft noise (flyover).

2.2 Environmental noise level criteria

The following environmental noise level criteria have been considered in this Report:

- Environmental Protection (Noise) Policy 2008, *Environmental Protection Act 1994* (State);
- Noise Impact Assessment Planning Scheme Policy (PSP), *Brisbane City Plan 2014* (Local)
- Australian Standard (AS) 1055.2 – 1997, Acoustics – Description and measurement of environmental noise

2.2.1 Environmental Protection (Noise) Policy 2008

Summary

Due to the rapid growth and increasing density of noise-producing activities in Queensland, the consideration of cumulative noise impacts and background creep is important. For development where background creep is likely, applicants are encouraged to use modelling to demonstrate that the activity will not exceed the standard set in Section 10 of the *Environmental Protection (Noise) Policy 2008* which stipulates:

> "*To the extent that it is reasonable to do so, noise from an activity must not be –*
>
> *a) for noise that is continuous noise measured by $L_{A90,T}$ – more than nil dB(A) greater than the existing acoustic environment measured by $L_{A90,T}$; or*
>
> *b) for noise that varies over time measured by $L_{Aeq,adj,T}$ – more than 5 dB(A) greater than the existing acoustic environment measured by $L_{A90,T}$."*

Relevance to the Project

- Noise emissions from the operation of the performance track including the 4WD test circuit and skid pan as well as associated facilities at the BNE Auto Mall are likely to vary over time. Therefore, a noise level limit of no more than 5 dB(A) greater than the existing acoustic environment measured by $L_{A90,T}$. is relevant.
- The criteria in Section 2.2.2 is more stringent for the purposes of this assessment.

2.2.2 Noise Impact Assessment Planning Scheme Policy

Summary

Brisbane City Council (BCC) has a published method of noise impact assessment for a proposed scheme (Brisbane Bity Plan 2014 - Schedule 6, v15.00/2019, in effect as of 31 May 2019). The Noise Impact Assessment PSP describes the application of an *intrusive noise criterion*, based on the Rating Background Level (RBL), which is based on the existing noise environment, and an *acoustic amenity*, which is based on a single number value for each time period for amenity. As the *intrusive noise criteria* is lower than the *acoustic amenity criteria* for residential areas surrounding the project during the day, the site will be assessed against the *intrusive acoustic criteria*, which is as follows:

$$\mathbf{dBL_{Aeq,T} = RBL + 3\ dB}$$

For locations which exceed the above criterion, a comparison to the applicable acoustic amenity criteria should be made.

Relevance to the Project

- To undertake an assessment of the potential noise impacts associated with the Project, an ambient noise survey is required around the Project site to quantify the existing acoustic environment.
- Background noise measurements have been recorded at various locations around the Project site (refer Section 3.2).
- Additionally, PSK Environmental (2017) has provided noise measurements undertaken at the Kingsford Smith Memorial and the BAC Service Centre (refer Section 3.3)
- The superseded AS1055.2-1997 will be used as a guideline for all other areas potentially impacted by the Project.

2.2.3 AS 1055.2 – 1997, Acoustics – Description and measurement of environmental noise

Summary

Appendix A of AS 1055.2 – 1997 provides estimated background noise levels for different areas containing residences (typically the most sensitive receiver type) in Australia. These are detailed below.

Table 3 Estimated average background sound levels from AS 1055.2 - Appendix A

Noise area category Note1,2	Description of neighbourhood	Average background A-weighted sound pressure level, $L_{A90,T}$					
		Monday to Saturday			Sundays and Public Holidays		
		0700 - 1800	1800 - 2200	2200 - 0700	0900 - 1800	1800 - 2200	2200 - 0900
R1	Areas with negligible transportation	40	35	30	40	35	30
R2	Areas with low density transportation	45	40	35	45	40	35
R3	Areas with medium density transportation or some commerce or industry	50	45	40	50	45	40
R4	Areas with dense transportation or some commerce or industry	55	50	45	55	50	45

Noise area category Note1,2	Description of neighbourhood	Average background A-weighted sound pressure level, $L_{A90,T}$					
		Monday to Saturday			Sundays and Public Holidays		
		0700 - 1800	1800 - 2200	2200 - 0700	0900 - 1800	1800 - 2200	2200 - 0900
R5 Note 3	Areas with very dense transportation or in commercial districts bordering industrial districts	60	55	50	60	55	50
R6 Note 3	Areas with extremely dense transportation or within predominantly industrial districts	65	60	55	65	60	55

Notes:

1) The division into noise area categories is necessary in order to accommodate existing sound levels encountered at residential sites in predominantly commercial or industrial districts, or in areas located close to main land transport routes, i.e. road and rail.

2) The noise area category most appropriate should be selected irrespective of metropolitan or rural zoning and will vary from location to location.

3) Some industrial and commercial sites are not predominant sources of high background sound levels.

This standard has since been superseded (updated as AS1055:2018), with Appendix A and any reference to the table above removed, however these noise level estimates are considered indicative of the ambient environment, in-lieu of noise measurements, particularly for less-noise sensitive receiver types (commercial properties, hotels etc.).

Relevance to the Project

- Based on Table 3 above, the sensitive and commercial receptors identified have had the following noise area category applied;
  - Commercial properties along Qantas Drive – R5
  - Novotel – R3
  - Hertz car rental – R4
  - Airport Prayer Room – R5

2.2.4 Project specific noise criteria

Project specific noise criteria for the various noise-sensitive receptors are outlined in Table 4. These noise criteria are based on measured background noise levels with the Noise Impact Assessment PSP (refer Section 2.2.2) for new noise sources (as this represents the most stringent requirement).

Derivation of the Project specific noise criteria is as follows:

- For residential properties, these criteria are derived from the measurements detailed in Table 7 of this report.
- For the Kingsford Smith Memorial, BAC Service Centre and nearby Prayer Room (within the Central Parking Area (CPA)), noise level measurements presented in Table 9 have been used to establish the proposed noise level criteria.
- All other potentially affected receivers used the estimated background noise levels presented in Table 3.

Table 4 Project Specific Noise Criteria

Noise-sensitive receptor	Criteria, Monday to Saturday dB $L_{Aeq,T}$			Comments
	Daytime 0700 - 1800	Evening 1800 - 2200	Night-time 2200 - 0700	
94 Serpentine Road, Pinkenba	49	46	46	Based on measurements detailed in Table 7.
633 Nudgee Road, Nundah	53	48	44	
789 Nudgee Road, Northgate	53	48	44	
Australian Catholic University	39	36	33	Based on measurements detailed in Table 9.
Kingsford Smith Memorial	55	53	55	
BAC Service Centre/McDonalds	59	58	57	
Prayer Room (Central Parking Area)	59	58	57	Based on BAC Service Centre measurements provided by PSK Environmental.
Nearest existing commercial property (Qantas Drive buildings) – (R5)	63	58	53	Based on estimated background levels in AS1055.2.
Nearest existing hotel – Novotel (floor 3) – (R3)	53	48	43	
Hertz car rental – (R4)	58	53	48	
Prayer Room (Airport) – (R5)	63	58	53	

2.3 Construction noise and vibration criteria

2.3.1 Construction noise criteria

The AEPR summarises the following minimum requirements for construction noise impacts of a building or other structure at the Brisbane Airport:

Table 5 Applicable noise criteria for construction and road traffic noise

Noise source	Noise criteria	Note
Construction (construction, maintenance or demolition of a building or other structure at an airport)	75 $dBL_{A10,15mins}$	Assessed at the site of a sensitive receptor Adjusted for tonal character or impulsiveness

2.3.2 Construction vibration criteria

No vibration related goals are discussed in the AEPR. The Australian Standard AS 2436-2010 *Guide to noise and vibration control on construction, demolition and maintenance sites* also does not provide vibration goals. However, it provides guidance on how vibration control should be undertaken on construction sites.

AS 2436-2010 recommends implementing time restrictions on processes involving exposure to potentially hazardous vibration, low-vibration plant and equipment, and signposting of vibration hazardous areas. Monitoring is identified in AS 2436-2010 as an essential component in the effective control of vibration from construction sites.

The *Guideline: Noise and vibration from blasting* (former Department of Environment and Heritage Protection, 2016) provides vibration criteria for construction blasting with a peak velocity for ground vibration set at 5 mm/s. Whilst no blasting will be conducted as part of Project works, the vibration criteria provides a vibration limit that can be implemented at the nearest sensitive structure (Kingsford Smith Memorial). This criterion is well below levels at which structural damage will occur. Vibrations below this criterion are unlikely to cause cosmetic cracking, including minor non-structural effects such as superficial cracking in cement render or plaster.

During vibration inducing works (e.g. piling) within 200 m of sensitive receptors, including the Kingsford Smith Memorial, and if a validated compliant regarding vibration is received, vibration monitoring shall be undertaken at the Kingsford Smith Memorial to ensure that vibration levels are kept below 5 mm/s in consultation with the BAC Environmental Advisor.

3 Baseline Conditions

3.1 Regional context and sensitive receptors

The Project site is located within an existing high noise environment and is exposed to high levels of daytime, evening and night time ambient noise from a variety of sources, including:

- Vehicular traffic on Moreton Drive, Airport Drive and Nancy Bird Way; and
- Aircraft movements associated with the Brisbane Airport.

Figure 2 below shows ANEF Mapping in relation to the Project site location and other major noise sources in the vicinity such as major roads and Brisbane Airport runways.

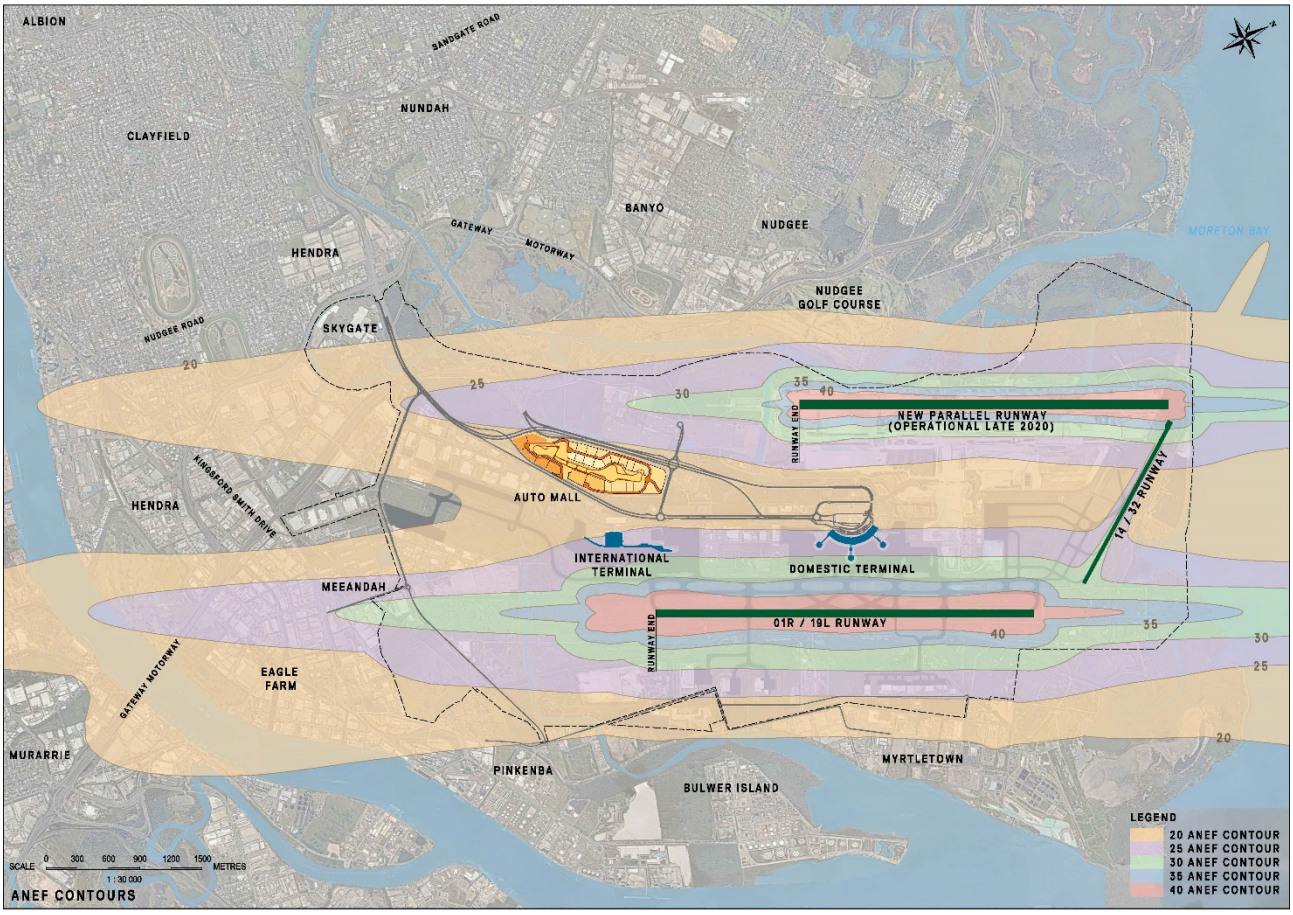


Figure 2 ANEF Mapping showing the Project site

Figure 2 shows the Project site is located within ANEF 20-25 and ANEF 25-30 noise contours for aircraft movements from Brisbane Airport. Based on these noise contours, the Project site is appropriate for commercial and light industrial land use, as per *Table 2.1 of AS 2021-2015.*

Given the existing noise environment from operations at Brisbane Airport, aircraft noise is not considered an obstacle to the proposed land uses. However, a detailed review of aircraft noise ingress into the proposed buildings will be required to achieve the internal background noise criteria.

The nearest residential suburbs to the Project site are Eagle Farm (2 km south-west) and Hendra, with Nundah, Northgate and Banyo located more than 2 km to the west and north.

The closest commercial receptors include:

- The Kingsford Smith Memorial (95 m east).
- Tenancies along Nancy Bird Way, such as:
  - Brisbane Airport Services Centre (approximately 50 m north, directly across Nancy Bird Way), including:
    - Shell Coles Express;
    - McDonalds and other food outlets; and
    - Vehicle servicing precinct – Ultra Tune, Sparkles Car Wash;
- CPA including:
  - Thrifty Car Rental and Hire; and
  - CPA Remote Public Car Park (approximately 120 m north-west, directly across Moreton Drive)
- Tenancies along Bert Hinkler Drive, such as:
  - CPA Staff Car Park Stages 1 and 2;
  - CPA Staff Car Park Stages 3 and 4 (under construction); and
  - Taxi, bus and limousine parking.
- Tenancies along Ivy May Way such as:
  - Europcar Rental;
  - Avis Car Rental;
  - Hertz Car Rental; and
  - Qantas Valet Storage Facility.
- Tenancies within the International Terminal (across Airport Drive), such as:
  - Airtrain services;
  - Secure car parking; and
  - International Terminal lounge, food and shopping outlets.
- Commercial tenancies along Qantas Drive (across Airport Drive).
- Commercial tenancies off Lomandra Drive.
- Flight training centres.

Additionally, other sensitive receptors located around the Project site include:

- Northgate State School (2.6 km west);
- Hendra State School (2.75 km south west);
- Novotel Hotel (1.5 km south west);
- Tadpoles and Joey Club Childcare Centre (2.1 km south west); and
- Pullman and Ibis Hotel (1.5 km north).

Figure 3 below identifies the location of these sensitive receptors as well as nearby commercial and residential areas.

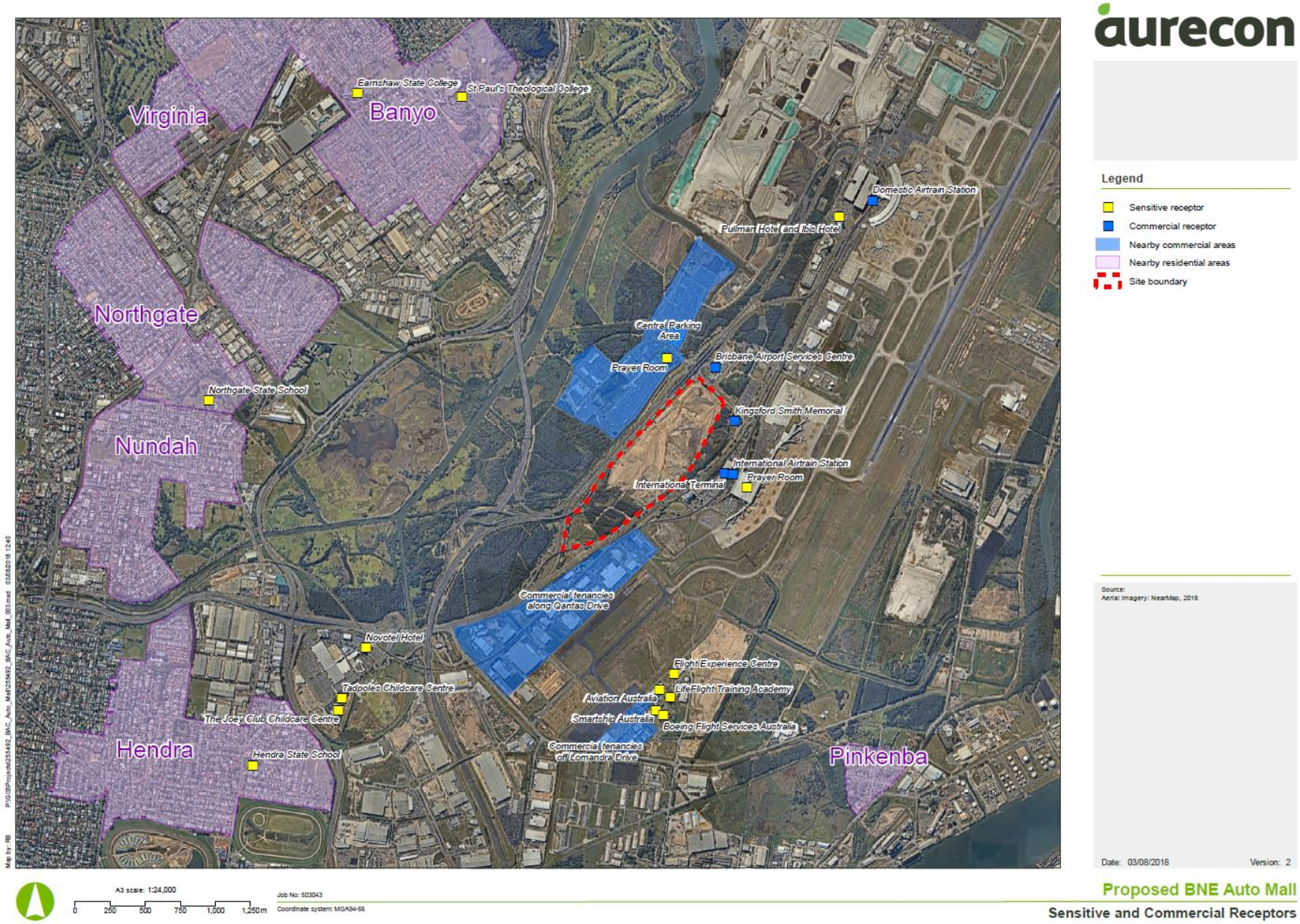


Figure 3 Nearby noise-sensitive receptors

3.2 Noise monitoring

Baseline noise monitoring has been undertaken at three locations around the Project site between the 26 February 2019 and 13 March 2019. The three locations have been selected based on their proximity to the sensitive receptors. The locations are to provide a representation of the existing noise levels at the identified sensitive receptors. The equipment used during the noise monitoring period is presented in Table 6 and locations of monitoring are shown in Figure 4 below.

Table 6 Noise monitoring equipment

Logger #	Approximate location	Model	Serial number	Date of Calibration
1	94 Lomandra Drive, Brisbane Airport	ARL Ngara	878156	19/11/2018
2	Airport conservation area	ARL Ngara	878155	19/11/2018
3	Virginia Soccer Club	ARL Ngara	878154	19/11/2018
-	-	ARL Calibrator	85217	21/11/2018

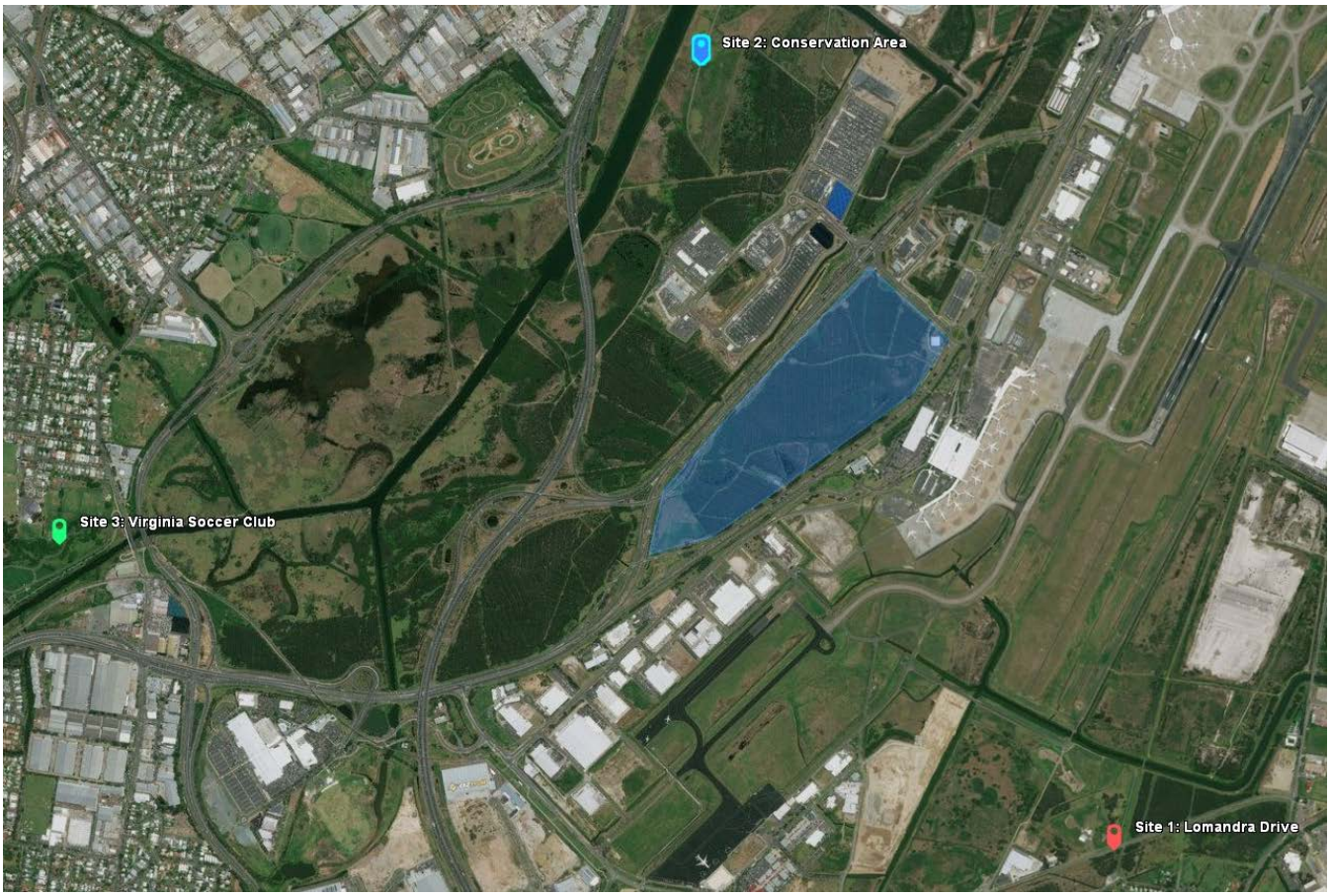


Figure 4 Noise monitoring locations conducted by Aurecon between 26/2/19 – 13/3/19

The noise levels measured during this monitoring period are presented in Table 7.

Table 7 Summary of measured noise levels by Aurecon

Logger #	Date/ Period	Average Noise Level $dBL_{Aeq,T}$			Rating Background Level dBL_{A90}		
		Daytime 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700	Day 0700 - 1800	Eve. 1800 - 2200	Night 2200 - 0700
1	26/02/19 – 05/03/19	62	60	57	46	43	43
2	26/02/19 – 05/03/19	51	50	52	45	45	41

Logger #	Date/ Period	Average Noise Level $dBL_{Aeq,T}$			Rating Background Level dBL_{A90}		
		Daytime 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700	Day 0700 - 1800	Eve. 1800 - 2200	Night 2200 - 0700
3	05/03/19 – 13/03/19	58	52	49	50	45	41

Measurement periods during inclement weather (high wind speeds or rain) were removed from the assessment. As a result, the dominant noise sources captured include:

- Aircraft movements
- Road traffic movements (standard, motorbike and heavy vehicle)
- Cricket chirping (distant, late night/early morning)
- Low frequency hum (distant, late night/early morning)
- Bird noise (distant and intermittent at Logger 2 location)

The use of the local sports areas, an idling truck and local nearby bird noises were removed from the assessment at Logger 3, as these noise sources will not be indicative of the existing noise environment at nearby sensitive receptors.

Meteorological data captured by the local Bureau of Meteorology weather station (Brisbane Airport, ID: 040842) was considered representative of the meteorological conditions at the noise logger locations.

The measured Bureau of Meteorology data and noise monitoring data is presented in Appendix A of this Report.

3.3 Review of existing data

Ambient noise level measurements from the following reports were also reviewed to quantify the existing noise environment around the Project site:

- Parallel Runway EIS/Major Development Plan (MDP) (2006)
- PSK Environmental Interim Report (2017)

For the Parallel Runway EIS/MDP, ambient noise levels at several locations surrounding the Project site were recorded in November 2005. The relevant locations to the Project site include:

- St Paul's Theological College (2.5 km north-west) – recorded distant traffic and birds
- 33 Franklin Street, Nundah (2.45 km west) – recorded distant traffic, insects, birds and occasional local traffic
- 17 McBride Road, Pinkenba (2.6 km south-east) – recorded birds, insects, children, animals and aircraft noise

The measured noise levels at these locations are summarised in Table 8 below. It is noted that the Parallel Runway EIS/MDP considered these noise levels to be 'typical' for these areas.

Table 8 Summary of previously measured noise levels - 2006

Site	Min $dBL_{A90,1hr}$			$dBL_{Aeq,Period}$		
	Daytime 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700	Daytime 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700
St Paul's Theological College (Educational facility)	36	33	30	56	51	44
33 Franklin Street, Nundah (residential property)	44	42	36	57	50	49

Site	Min $dBL_{A90,1hr}$			$dBL_{Aeq,Period}$		
	Daytime 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700	Daytime 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700
17 McBride Road, Pinkenba (residential property)	42	37	34	57	52	51

Source: BAC 2006

A comparison of Table 7 and Table 8 shows that noise levels have generally increased from 2006 to 2019, across all time periods (daytime, evening and night).

Additionally, sound level monitoring was undertaken at the Project site by PSK Environmental in September 2017. A summary of these results is included in Table 9 below. For ease of comparison, values from the PSK Environmental Interim Report (2017) have be rounded to the nearest whole number.

Table 9 Summary of measured noise levels by PSK Environmental (2017)

Location	Date/ Period	dBL_{Aeq}			dBL_{A10}			dBL_{A90}		
		Day 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700	Day 0700 - 1800	Eve. 1800 - 2200	Night 2200 - 0700	Day 0700 - 1800	Evening 1800 - 2200	Night 2200 - 0700
Kingsford Smith Memorial	05/09/17 – 19/09/17	60	55	58	60	56	59	52	48	50
BAC Service Centre	20/09/17 – 05/10/17	61	60	60	63	62	62	56	53	52

The results in Table 9 show higher measured noise levels at the Kingsford Smith Memorial and BAC Service Centre compared to the locations in Table 7 and Table 8. The noise levels are higher in these locations given their location at the Brisbane Airport. A copy of the 'Site Plan and Sampling Locations' from the PSK Environmental Interim Report (2017), detailing noise monitoring is detailed in Appendix B of this Report.

3.4 Vibration

Baseline vibration monitoring was undertaken at the Kingsford Smith Memorial by PSK Environmental over 14 days between 7 September 2017 and 25 September 2017. A summary of the vibration results is included in Table 10 below.

Table 10 2017 Baseline Vibration monitoring survey results

Monitoring period	Maximum vibration detected (mm/s)	Second highest reading (mm/s)	Average vibration detected (mm/s)
17 – 13 September 2017	1.0	0.97	0.12
14 September 2017	6.44	0.75	0.16
19 – 25 September 2017	3.53	1.58	0.12

During the 14-day baseline monitoring period, the maximum vibration result recorded was 6.44 mm/s which exceeds the set performance criteria of 5.0 mm/s. The exceedance occurred at Kingsford Smith Memorial on 14 September 2017 at approximately 3 pm for a one-minute period and was reported by PSK Environmental to be attributed to tampering of the vibration monitoring equipment. The average vibration detected was 0.12 mm/s which is well below 1 mm/s.

4 Methodology

4.1 Noise modelling

4.1.1 Noise-sensitive receptors

Sound level predictions for nine typical operational scenarios for the BNE Auto Mall have been conducted for a series of noise-sensitive locations near the Project site. The noise-sensitive locations in the noise model have been selected to include the nearest affected receivers (both existing and proposed receptors) and are shown in Figure 5.

Figure 5 Noise prediction locations

4.1.2 Prediction methodology

The level of noise in local environs that arise from activities at the Project site will depend upon a number of factors, the more significant of which are:

- The sound power levels (L_{WA}) of the plant of equipment used on site. In this case, motor vehicles being driven around the performance track.
- The periods of operation of the 'noisy activities' on site. The performance track will operate seven days a week with operating hours ranging between 9 am and 10 pm.
- The distance between the noise source and receiving position.
- The presence or absence of screening effects due to barriers, or ground absorption.
- Any reflection effects due to the facades of buildings, etc.

The parameter that is in general use and is recommended internationally for the description of environmental noise at a receptor position is the equivalent continuous sound pressure level, L_{eq} (expressed in dB). The L_{eq} describes the total amount of acoustic energy measured but does not take any account of the ear's ability to hear certain frequencies more readily than others. Instead, an A-weighting is applied to form the L_{Aeq} (expressed in dBA) as this is found to relate better to the loudness of the sound heard.

In order to assist in the calculation of predicted L_{Aeq} noise levels for the Project, SoundPLAN noise modelling software has been used. The noise prediction software has been configured to undertake the calculations in accordance with ISO 9613-2.

The parameters used in SoundPLAN are listed in Table 11 below.

Table 11 Modelling parameters

Parameter	Setting/Source
Software	SoundPlan v8.0
Algorithm	ISO 9613-2
Parameter	$L_{Aeq,1h}$
Ground Absorption	1.0
Road Absorption	0.5
Receiver Height	1.5 m
Noise Contour Grid	1.5 m height, 5 m resolution
Receiver positions	Free-field
Reflection Order	3

4.1.3 Sound power levels

The following sound power levels have been used in the modelling based on Aurecon's experience of similar projects and our comprehensive library of noise sources. Peak noise levels have been used to ensure a conservative approach is taken in the model to high performance vehicles driving around the performance track. For the purposes of this assessment, 'high performance vehicles' are assumed to mean those with the highest sound power levels, likely to be vehicles with the largest engines and loudest exhaust systems. The peak noise level for a high performance vehicle has been modelled as 109 dBA from a distance of 6 m, while motorbikes have been modelled as 106 dBA from a distance of 6m.

Table 12 Assumed noise levels

Sound source	Sound Power Level, dBA	Sound Pressure Level, dBA at 'm' metres	Reference	Assumptions
Test stand for diesel engines	107 dB L_{WA}	-	SoundPLAN library data	-
Car spectrum for normal road car	98 dB L_{WA}	-	SoundPLAN library data	-
High performance vehicle on performance track	-	109 dBA at 6 m	Library data	Peak noise level measured with vehicle driving around track
High performance vehicle on performance track	-	99 dBA at 6 m	Library data	Minimum noise level measured with vehicle driving around a track
Motorbikes	-	106 dBA at 6 m	Library data	-
Spectator seating areas	83 dB L_{WA} per m^2	-	Library data	Assumed a level of 80 dBA per person, occupying an area of 2 m^2 each.

4.1.4 Assumptions

The following assumptions have been made for this assessment:

- Sound power levels have been derived from SoundPLAN library data.
- The terrain is generally flat between the noise sensitive locations and the Project site.
- No modulation, tonal or impulsiveness characteristics are present in the source noise levels.

5 Assessment

The noise model includes nine 'typical' scenarios for the operation of the BNE Auto Mall including the performance track, 4WD test circuit and skid pan. The operational activities are based on the proposed activities outlined within Section 2.4.1 of the MDP. The modelled scenarios also include a combination of potential operational activities occurring simultaneously to represent day-to-day operations, semi-regular/regular events and special and major events.

5.1 Noise level predictions

5.1.1 Modelling Scenarios

Preliminary noise modelling has been undertaken based on the potential noise sources within the Project site to provide a general understanding of the expected noise impacts, sources and extent of mitigation required. There are nine 'typical' scenarios that have been assessed which are associated with day-to-day operations of the BNE Auto Mall as well as potential operational activities for event days. Each of these scenarios are detailed below:

- **Scenario One:** High performance vehicles using the performance track, with six laps within a one hour period (operating hours from 9 am to 10 pm).
- **Scenario Two**: Normal test driving situations (using normal road cars) assuming a maximum of 12 laps within a one hour period. This Scenario aligns with the potential operational activities for *driver training days* (operating hours from 9 am to 6 pm)
- **Scenario Three:** Scenario One with the addition of six stationary (idling) vehicles at pit-stop locations. This Scenario aligns with the potential operational activities for *driver experience days* (operating hours from 9 am to 10 pm).
- **Scenario Four:** Scenario One with the addition of two vehicles using the skid pan (operating hours from 9 am to 10 pm).
- **Scenario Five:** Scenario Three with the addition of two vehicles using the skid pan (operating from 9 am to 6 pm).
- **Scenario Six:** High performance vehicles using the performance track, with twelve vehicle laps of the track within a one hour period (operating from 9 am to 10 pm).
- **Scenario Seven:** Scenario Four with the addition of six vehicles per hour using the 4WD test circuit, and six motorbikes per hour using the performance track. This Scenario aligns with the potential operational activities that are anticipated for *shared test drive days, 4WD training days* and *motorbike days* (operating from 9 am to 10 pm). It is noted these activities may occur in isolation of other activities, however, the simultaneous use of high performance vehicles, the skid pan, 4WD test circuit and motorbikes has been assessed to represent the worst-case scenario.
- **Scenario Eight:** Six high performance vehicles on the performance track, completing six laps simultaneously in any one hour period. This Scenarios aligns with the potential operational activities that are anticipated for *corporate driving days* (operating from 9 am to 6 pm).
- **Scenario Nine:** Six high performance vehicles using the performance track, completing 12 laps in any one hour period. Also includes up to 5,000 spectators, cars idling in the pit stop locations and operation of a PA system (operating from 9 am to 10 pm). It is noted the estimated maximum number of people for the *special and/or major event days* is 1000 spectators, however, this Scenario has assessed a worst-case scenario with 5,000 spectators.

5.1.2 Results and discussion

The predicted noise impact of the BNE Auto Mall is considered at both existing and future noise-sensitive receptors in the vicinity of the Project site. An assessment of the nine 'typical' scenarios (at different locations)

is presented in Table 13, and should be read in conjunction with the noise contour maps included in Appendix C. Predicted noise levels are preliminary estimates, and it is noted that levels will vary depending on vehicle type and frequency of usage.

Note that cumulative noise impact in the wider acoustic environment from each scenario is not presented in the below table but will need to be considered as part of the final design of any development to ensure that the 'background noise creep' objectives of the Noise Impact Assessment PSP are achieved.

Table 13 Predicted noise levels at noise sensitive receivers for each operational scenario

Noise-sensitive receptor	Predicted noise level, $dBL_{Aeq,1h}$								
	Scenario #								
	One	Two	Three	Four	Five	Six	Seven	Eight	Nine
94 Serpentine Road, Pinkenba	19	10	20	39	39	30	39	35	43
633 Nudgee Road, Nundah	18	8	18	37	37	28	38	33	41
789 Nudgee Road, Northgate	19	9	19	39	39	29	39	34	43
Australian Catholic University	4	15	15	36	36	25	36	30	38
Nearest existing commercial property	46	36	47	59	59	56	59	61	72
Nearest existing hotel – Novotel (floor 3)	<25	<25	<25	43	43	34	43	39	46
Pullman and IBIS Hotel (floor 3)	<25	<25	<25	47	47	33	47	38	45
Hertz car rental	35	26	35	58	58	46	57	51	57
Kingsford Smith Memorial	37	27	37	59	59	47	59	52	60
BAC Service Centre	38	28	38	59	59	48	59	53	59
Prayer Room (Central parking area)	37	28	38	59	59	48	59	53	59
Prayer Room (Airport)	37	28	39	58	58	48	58	53	59

Table 14 below compares the predicted noise levels in Table 13 above against the Project specific daytime criteria outlined in Table 4. Daytime noise levels have been considered most appropriate for comparison, as the most intensive usage of the performance track is likely to occur during this period.

Table 14 Comparison between predicted noise levels and project criteria (day)

Noise-sensitive receptor	Noise Criteria dBL_{Aeq} (Day)	Predicted difference between predicted noise level and project specific criteria, dB (only predicted differences of noise levels above the applicable criteria)								
		Scenario One	Scenario Two	Scenario Three	Scenario Four	Scenario Five	Scenario Six	Scenario Seven	Scenario Eight	Scenario Nine
94 Serpentine Road, Pinkenba	49	-	-	-	-	-	-	-	-	-
633 Nudgee Road, Nundah	53	-	-	-	-	-	-	-	-	-
789 Nudgee Road, Northgate	53	-	-	-	-	-	-	-	-	-
Australian Catholic University	39	-	-	-	-	-	-	-	-	-
Nearest existing commercial property	63	-	-	-	-	-	-	-	-	9
Nearest existing hotel – Novotel (floor 3)	53	-	-	-	-	-	-	-	-	-
Nearest existing Pullman and IBIS hotel (floor 3)	63	-	-	-	-	-	-	-	-	-
Hertz car rental	58	-	-	-	-	-	-	-	-	-
Kingsford Smith Memorial	55	-	-	-	4	4	-	4	-	5
BAC Service Centre	59	-	-	-	-	-	-	-	-	-

Noise-sensitive receptor	Noise Criteria dBL_{Aeq} (Day)	Predicted difference between predicted noise level and project specific criteria, dB (only predicted differences of noise levels above the applicable criteria)								
		Scenario One	Scenario Two	Scenario Three	Scenario Four	Scenario Five	Scenario Six	Scenario Seven	Scenario Eight	Scenario Nine
Prayer Room (Central parking area)	59	-	-	-	-	-	-	-	-	-
Prayer Room (Airport)	63	-	-	-	-	-	-	-	-	-

For operational scenarios which are likely to operate to 10 pm (and thus into the evening period), a comparison to the evening noise criteria was made, and is presented in Table 15.

Table 15 Comparison between predicted noise levels and project criteria (evening)

Noise-sensitive receptor	Noise Criteria dBL_{Aeq} (Evening)	Predicted noise level, $dBL_{Aeq,1h}$					
		Scenario One	Scenario Three	Scenario Four	Scenario Six	Scenario Seven	Scenario Nine
94 Serpentine Road, Pinkenba	46	-	-	-	-	-	-
633 Nudgee Road, Nundah	48	-	-	-	-	-	-
789 Nudgee Road, Northgate	48	-	-	-	-	-	-
Australian Catholic University	36	-	-	-	-	-	2
Nearest existing commercial property	58	-	-	1		1	14
Nearest existing hotel – Novotel (floor 3)	48	-	-	-	-	-	-
Nearest existing Pullman and IBIS hotel (floor 3)	58	-	-	-	-	-	-
Hertz car rental	53	-	-	4	-	4	4
Kingsford Smith Memorial	53	-	-	6	-	6	7
BAC Service Centre	58	-	-	1	-	1	1
Prayer Room (Central parking area)	58	-	-	1	-	1	1
Prayer Room (Airport)	58	-	-	-	-	-	1

Based on these results, the following observations can be made in relation to the predicted noise impact of the BNE Auto Mall:

Daytime Operations (9 am – 6 pm)

All scenarios for the BNE Auto Mall are predicted to be in compliance with the daytime local noise criteria at the following locations:

- 94 Serpentine Road, Pinkenba
- 633 Nudgee Road, Nundah
- 789 Nudgee Road, Northgate
- Australian Catholic University
- Novotel
- Pullman and IBIS hotel
- Hertz car rental
- BAC Service Centre
- Prayer Room (Central parking area)
- Prayer Room (Airport)

Daytime noise criteria exceedances are predicted for the following receptors for the noted operational scenarios:

- Commercial properties along Qantas Drive
  - A 9 dB exceedance for Operational Scenario Nine.
- Kingsford Smith Memorial
  - A 4 dB exceedance for Operational Scenario Four.
  - A 4 dB exceedance for Operational Scenario Five.
  - A 4 dB exceedance for Operational Scenario Seven.
  - A 5 dB exceedance for Operational Scenario Nine.

The exceedances for Scenario Nine relates to operational activities that are associated with special and/or major event days. As such, these exceedances would occur up to a maximum of twice a year (i.e. bi-annual events).

With respect to the Kingsford Smith Memorial predicted exceedances, visitors and/or workers on the site are typically not there for extended periods of time (i.e. self-guided tours only) and therefore are unlikely to be exposed to the hour-long predicted noise levels.

Evening operations (6 pm – 10 pm)

All scenarios for the BNE Auto Mall are predicted to be in compliance with the evening local noise criteria at the following locations;

- 94 Serpentine Road, Pinkenba
- 633 Nudgee Road, Nundah
- 789 Nudgee Road, Northgate
- Novotel
- Pullman and IBIS hotel

Evening noise criteria exceedances are predicted for the following receptors for the noted operational scenarios:

- Australian Catholic University
  - A 2 dB exceedance for Operational Scenario Nine.
- Commercial properties along Qantas Drive
  - A 1 dB exceedance for Operational Scenario Four.
  - A 1 dB exceedance for Operational Scenario Seven.
  - A 14 dB exceedance for Operational Scenario Nine.
- Hertz Car Rental
  - A 4 dB exceedance for Operational Scenario Four.
  - A 4 dB exceedance for Operational Scenario Seven.
  - A 4 dB exceedance for Operational Scenario Nine.
- Kingsford Smith Memorial
  - A 6 dB exceedance for Operational Scenario Four.
  - A 6 dB exceedance for Operational Scenario Seven.
  - A 7 dB exceedance for Operational Scenario Nine.
- BAC Service Centre

  - A 1 dB exceedance for Operational Scenario Four.
  - A 1 dB exceedance for Operational Scenario Seven.
  - A 1 dB exceedance for Operational Scenario Nine.
- Prayer Room (Service Centre)
  - A 1 dB exceedance for Operational Scenario Four.
  - A 1 dB exceedance for Operational Scenario Seven.
  - A 1 dB exceedance for Operational Scenario Nine.
- Prayer Room (Airport)
  - A 1 dB exceedance for Operational Scenario Nine.

As previously stated, the exceedances for Scenario Nine relates to operational activities that are associated with special and/or major event days. As such, these exceedances would occur up to a maximum of twice a year (i.e. bi-annual events) and do not form part of the day-to-day operations of the BNE Auto Mall.

- A 2 dB exceedance for this Scenario is predicted at Australian Catholic University. As noise levels in this area were measured in 2006, it may be productive that noise monitoring re-occur at this receptor for updated background noise levels. As the predicted exceedance is minor, it may be productive to engage this site for operational times, as the min. dBL_{A90} (likely obtained from the 9 pm – 10 pm period) may not be applicable to the concurrent use of both the BNE Auto Mall and University. When comparing the predicted noise levels to the Low density residential zone boundary acoustic amenity criterion ($45dBL_{Aeq,evening}$) (as the Educational zone borders with the Low density residential zone), compliance is met.

With regard to the exceedances predicted for the commercial properties along Qantas Drive, these businesses are typically open during the daytime only, and thus are not likely to have any onsite workers and/or visitors during the evening period. Therefore, exceedances at these locations would likely not impact these commercial properties. Nevertheless, it is recommended to undertake discussions with local in regard to the BNE Auto Mall's operational hours. As the commercial buildings are located on the Airport Land Use Zone, there is no applicable acoustic amenity criterion.

For the predicted 1 dB exceedances, these exceedances are very minor, and it is expected that these exceeding locations be managed via stakeholder engagement.

With respect to the Kingsford Smith Memorial predicted exceedances, as previously noted, visitors and/or workers on the site are typically not there for extended periods of time (i.e. self-guided tours only) and therefore are unlikely to be exposed to the hour-long predicted noise levels.

Hertz Car Rental is predicted to have an approximate external exceedance of 4 dB above the background noise criteria for three operational scenarios (Scenarios Four, Seven and Nine). As this location is open until late (12:30 am), concurrent use of the BNE Auto Mall and Car Rental will occur. Based on preliminary desktop assessment, it appears the Hertz Office is enclosed within the building, which will likely reduce noise levels to AS2107:2016 design noise levels for an office reception (below 45 dBA).

While residential properties are predicted to be in compliance with both the daytime and evening noise criteria, it is recommended that residential properties in nearby neighbourhoods be informed via stakeholder engagement of bi-annual events, as complaints may still occur.

5.1.3 Other noise sources

The proposed BNE Auto Mall is likely to include a performance track that will require the use of a PA system on the Project site, proposed to be used for emergency situations only. The following has been considered in relation to the PA system:

- The design and commissioning of the PA system should be considered as part of the Operational Noise Management Plan for the facility.
- The detailed design of the PA system will need to consider the location and directionality / spill of the speakers, and noise limiters, as appropriate.

- Specification of the PA system is subject to detailed design.

5.1.4 Construction noise and vibration

At the time of writing, the construction methodology for the Project has not been confirmed. It is understood that the construction phase will involve dealerships, brand experience centres and the performance track. These will be constructed simultaneously. It is assumed that construction of any future development on the Project site will involve excavation, structural works and fitout works, subject to development of a final program.

It is estimated that the total construction duration for the BNE Auto Mall will last a number of weeks/months and any noisy construction activities would be conducted during typical weekday hours between 7:00am and 6:00pm. With appropriate selection of plant and typical noise mitigation measures, construction noise from general earth works and typical construction activities are expected to generally comply with the applicable noise and vibration limits at the neighbouring properties.

Appropriate noise management measures can be used to mitigate any noise effects. Given the limited information available at this stage, it is recommended that a Construction Noise and Vibration Management Plan (CNVMP) is developed as a Condition of Consent. The CNVMP will outline appropriate measures to mitigate any potential adverse noise effects, including communication with neighbours.

An assessment of construction noise and vibration impacts associated with the initial earthworks phase of the Project (referred to as site preparatory works) was undertaken for the preparation of the Environmental Assessment Report (EAR) dated August 2017. The findings of this EAR concluded that potential impacts on the nearest receptors from the site preparatory works can be managed with appropriate mitigation measures outlined in Appendix E.

It is considered that nearby residential areas (Eagle Farm, Hendra, Nundah, Northgate and Banyo) are a sufficient distance away from the Project site and will not experience any adverse construction noise impacts.

Noise impacts may also be associated with construction vehicle traffic. Traffic due to workforce movements and delivery of materials will increase the ambient noise levels on the Project site and adjoining access routes. However, it is not expected that any change in noise will be noticeable given access routes are currently major road corridors.

5.1.5 Construction noise and vibration management plan (CNVMP)

It is considered that a CNVMP constitutes the best practicable option to mitigate the construction noise and vibration effects on the adjacent receivers and to minimise disruption to existing airport facilities and operations.

The CNVMP should, as a minimum, identify the following:

- Proposed construction activities and associated noise and vibration levels;
- Days and hours of site operation;
- Identification of affected neighbours;
- Noise mitigation measures;
- Construction noise monitoring requirements;
- Procedures for community liaison (e.g. distribution of site contact information etc.); and
- The CNVMP should adopt mitigation measures outlined in AS2436-2010.

5.2 Mitigation Measures

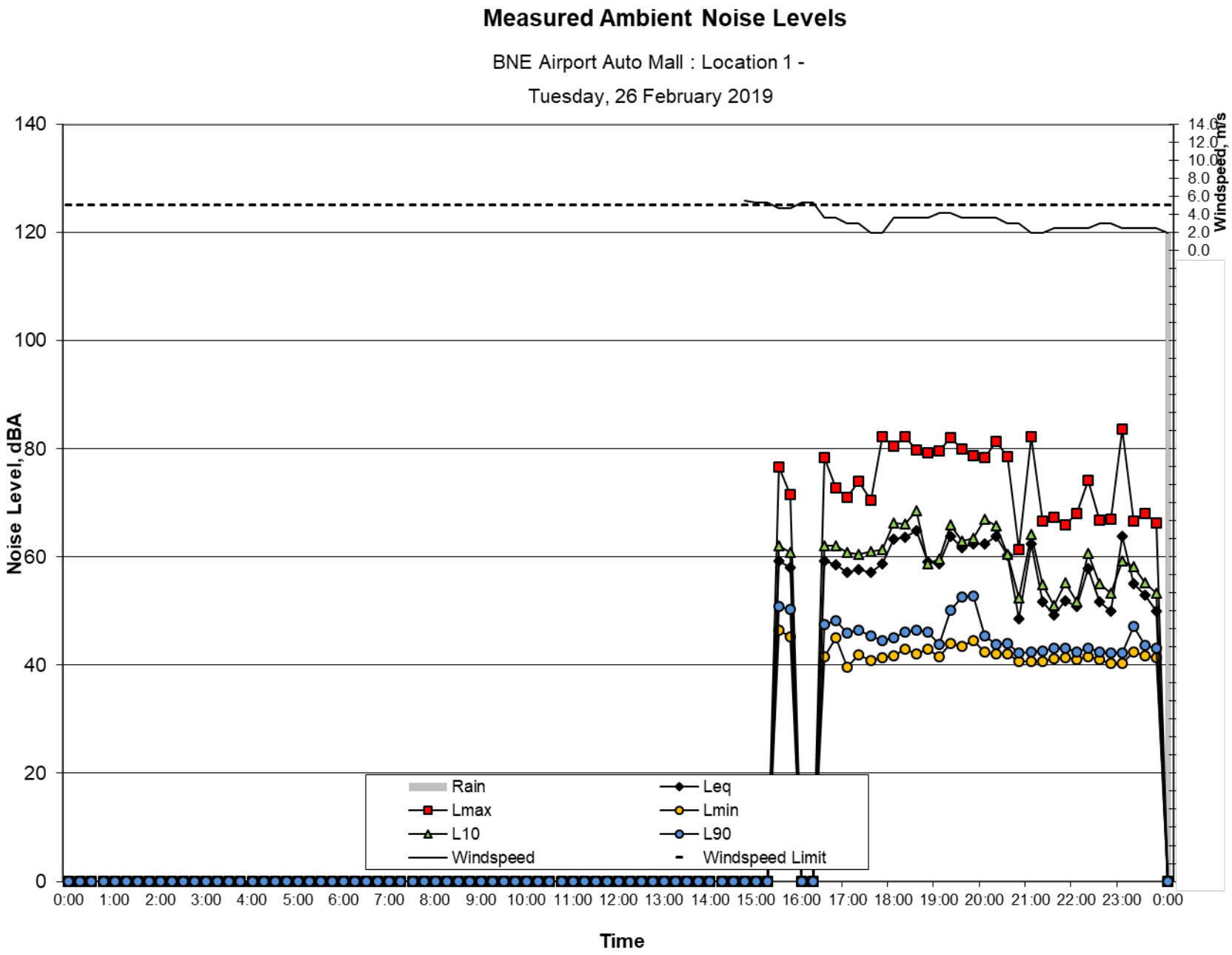
A comprehensive list of proposed noise mitigation measures is included as Appendix E. It is anticipated that a number of best practice mitigation measures are considered appropriate to mitigate potential noise impacts associated with the construction and operation of the BNE Auto Mall including restricting the use of the PA system to emergency situations only, stakeholder engagement with affected receptors (i.e. Australian Catholic University, BAC Service Centre and Qantas Drive businesses) and engineering design strategies such as perimeter bunds and acoustic screening, where necessary.

6 Summary

- A preliminary high-level assessment of potential noise impacts of the BNE Auto Mall and associated operational activities including the performance track, 4WD test circuit and skid pan has been conducted. Relevant noise level criteria for the operation of the BNE Auto Mall has been determined.
- An assessment of the baseline conditions at the Project site has been completed, with existing and future noise-sensitive receptors identified.
- The proposed commercial buildings (i.e. dealerships and brand experience centres) are appropriate land uses to be located within the existing noise environment of the Brisbane Airport.
- A comprehensive noise model of the Project site including nine 'typical' operational scenarios has been completed, and an assessment has been made in accordance with the appropriate noise impact assessment methodology for new noise sources.
- During periods of intense operational activity, predicted noise levels may exceed the Project specific noise level criteria at the Kingsford Smith Memorial and nearby commercial locations in the vicinity of the Project site.
- Operational and engineering design mitigation measures will be necessary to ensure that noise levels at future commercial receptors (dealerships and brand experience centres) within the BNE Auto Mall do not exceed the relevant criteria during periods of intense operational activities. Appropriate best practice and site-specific noise mitigation measures have been recommended in Appendix E.
- It is considered that the nearby residential areas (Eagle Farm, Hendra, Nundah, Northgate and Banyo) are a sufficient distance away from the Project site and will not experience any noise or vibration impacts as a result of the construction and operation of the BNE Auto Mall.
- With the incorporation of appropriate noise mitigation measures, the BNE Auto Mall is considered likely to operate within the Project specific criteria for existing and future noise sensitive receptors during the daytime operations.
- Stakeholder engagement with affected commercial precincts (Australian Catholic University, BAC Service Centre, Qantas Drive businesses) is recommended to understand their evening operations. This will help assess the number of true affected businesses that may be impacted by the operation of the BNE Auto Mall during the evening. Once confirmed, further mitigation strategies may be required.
- Due to the irregular occurrence of Scenario Nine (bi-annual), it is recommended that stakeholder engagement occur prior to events at exceeding locations, and possibly at nearby residential areas is undertaken.
- Construction noise and vibration has been considered, and the development of a CNVMP in accordance with AS2436-2010 and the mitigation measures outlined in Appendix E is recommended.
- It is recommended that sound power levels and operational activities are reviewed during the commissioning phase as outlined in the *Operational Noise Management Plan* (Appendix D), and the 'typical' scenarios that formed part of this assessment are updated accordingly.

A

Noise monitoring results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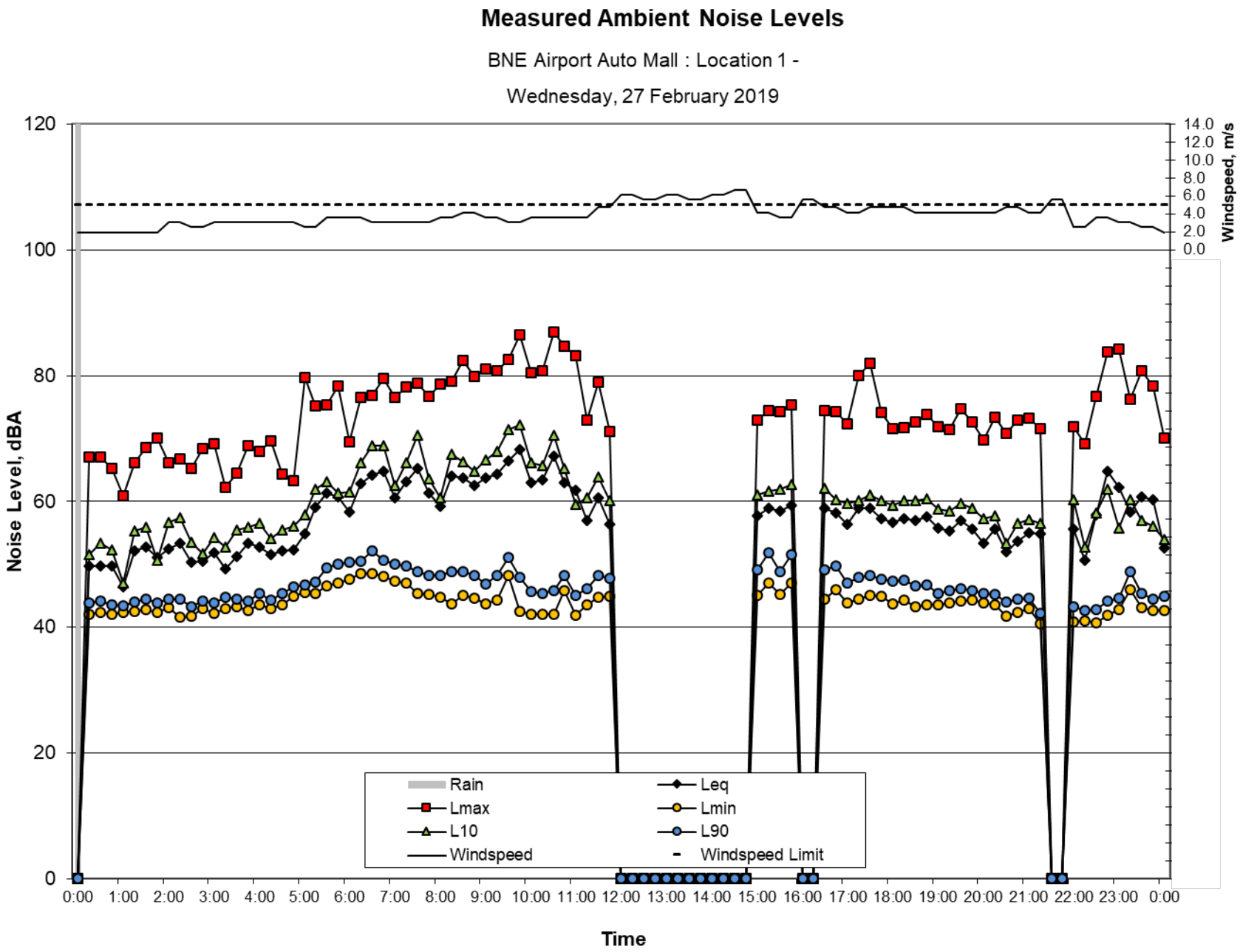
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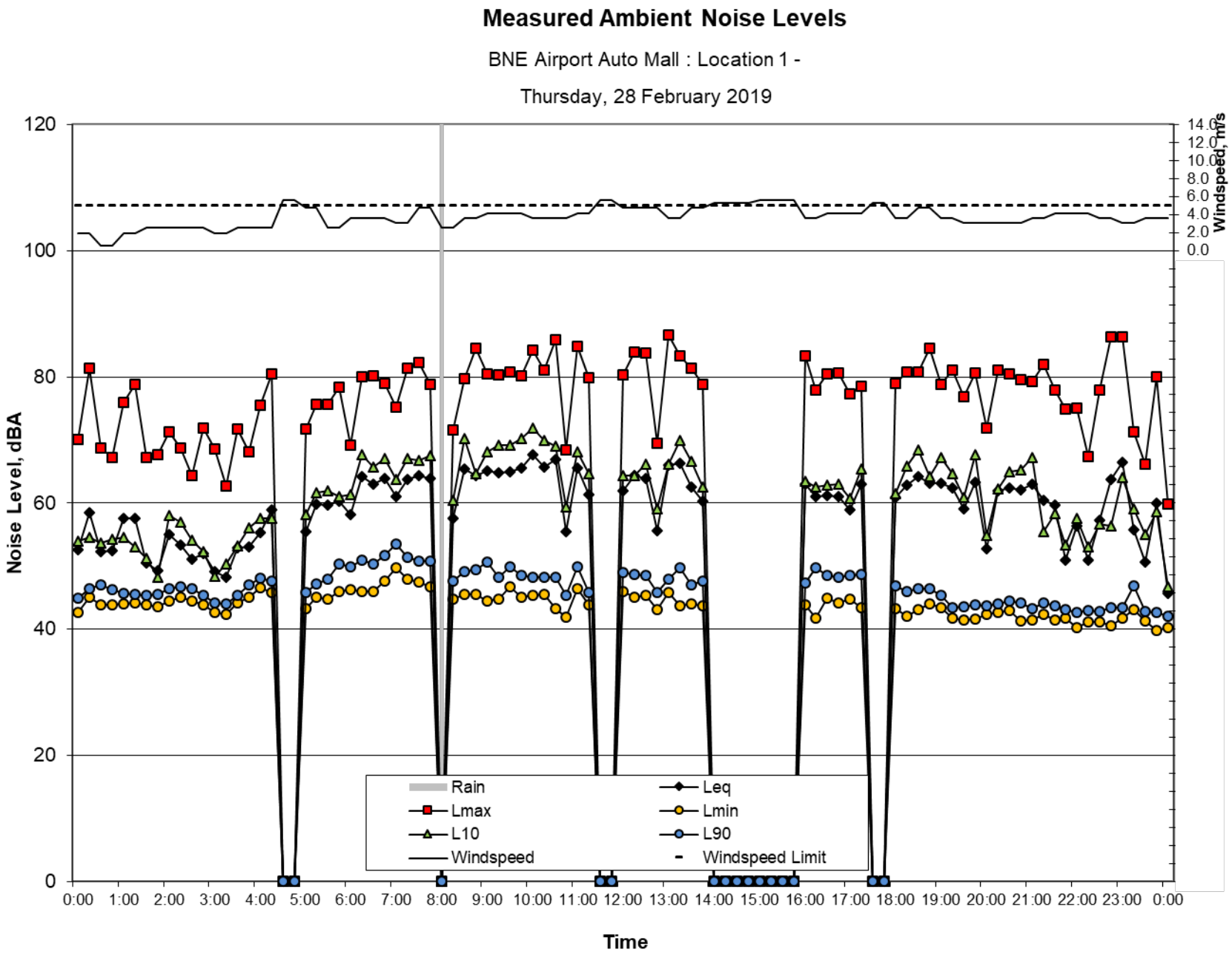
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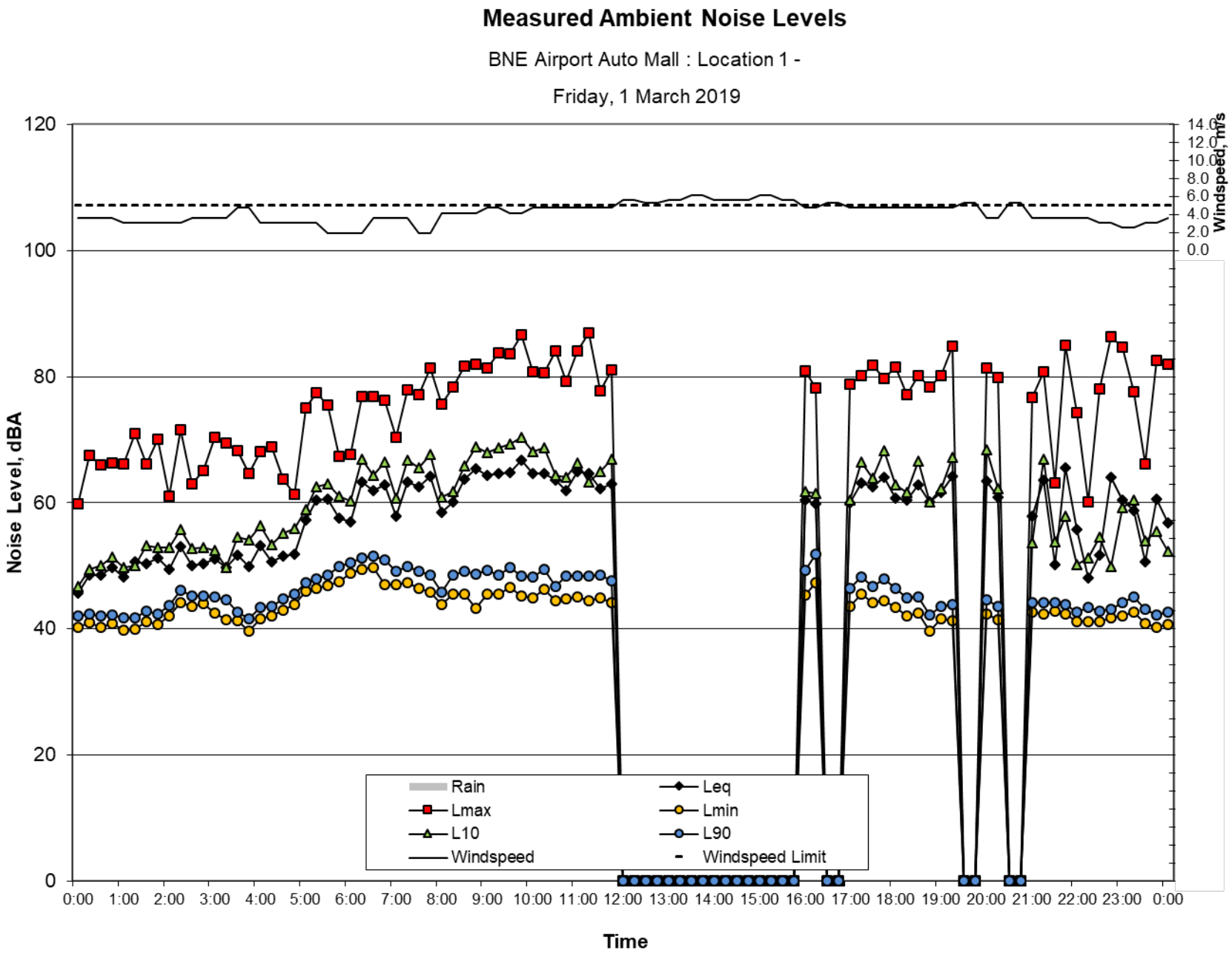
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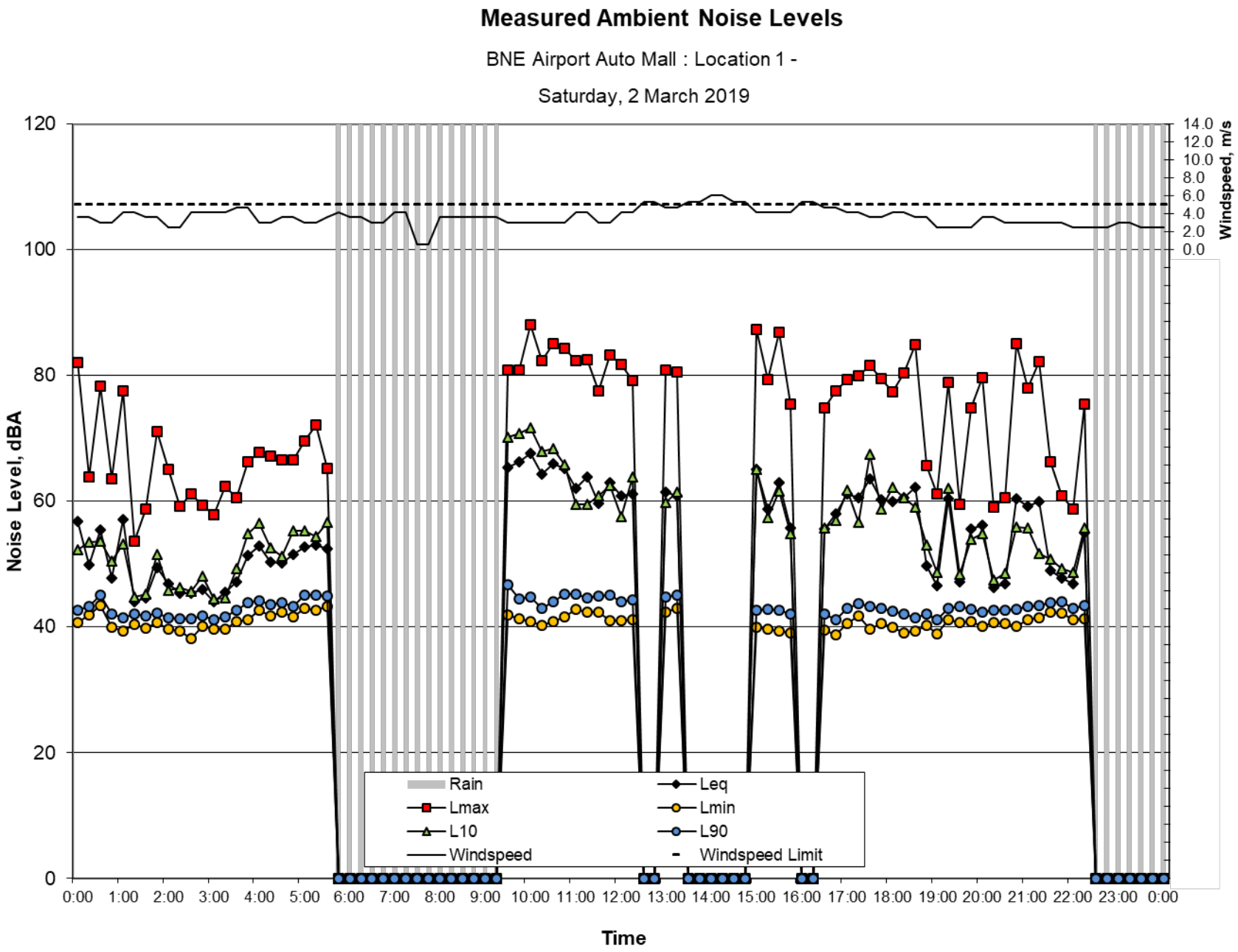
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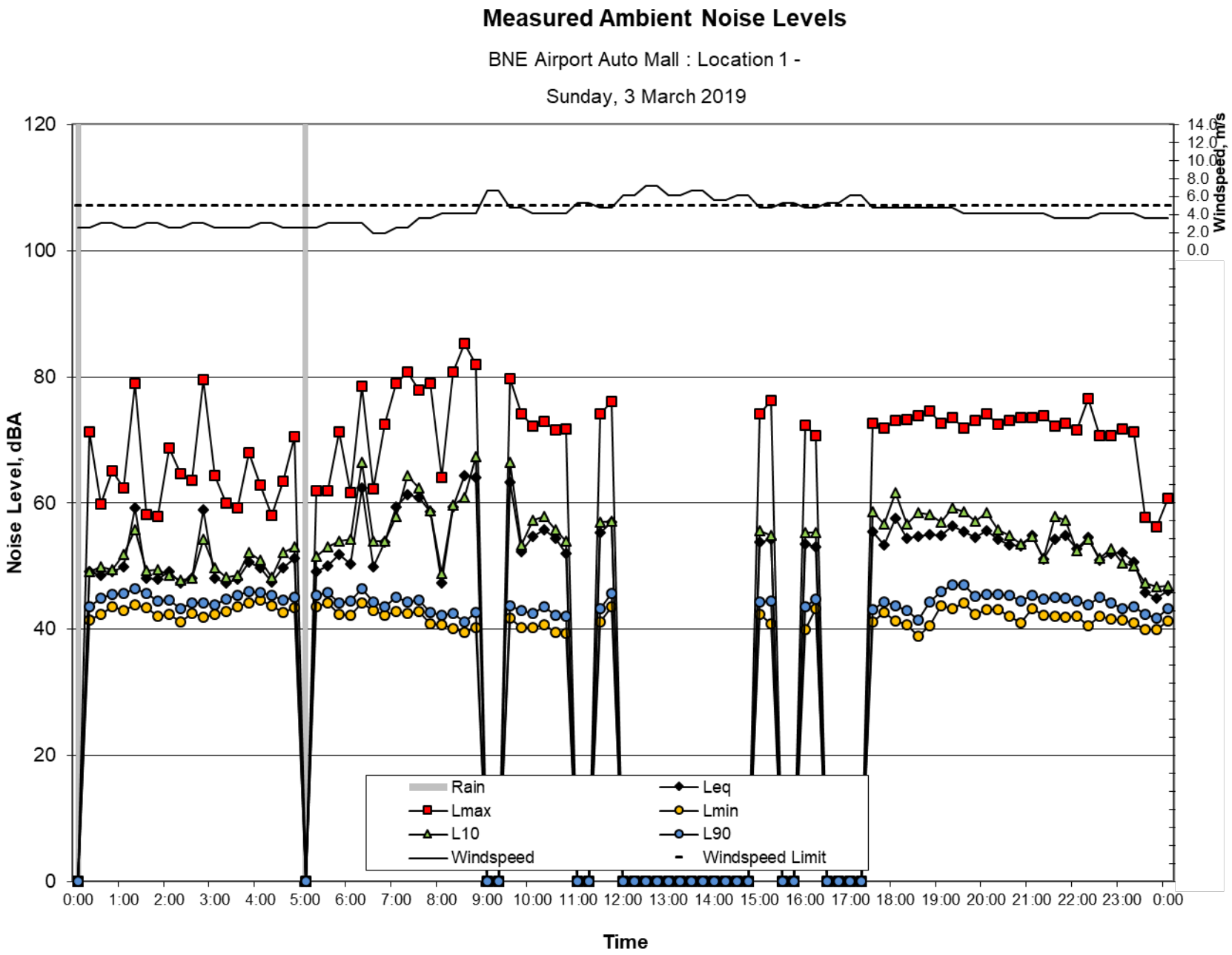
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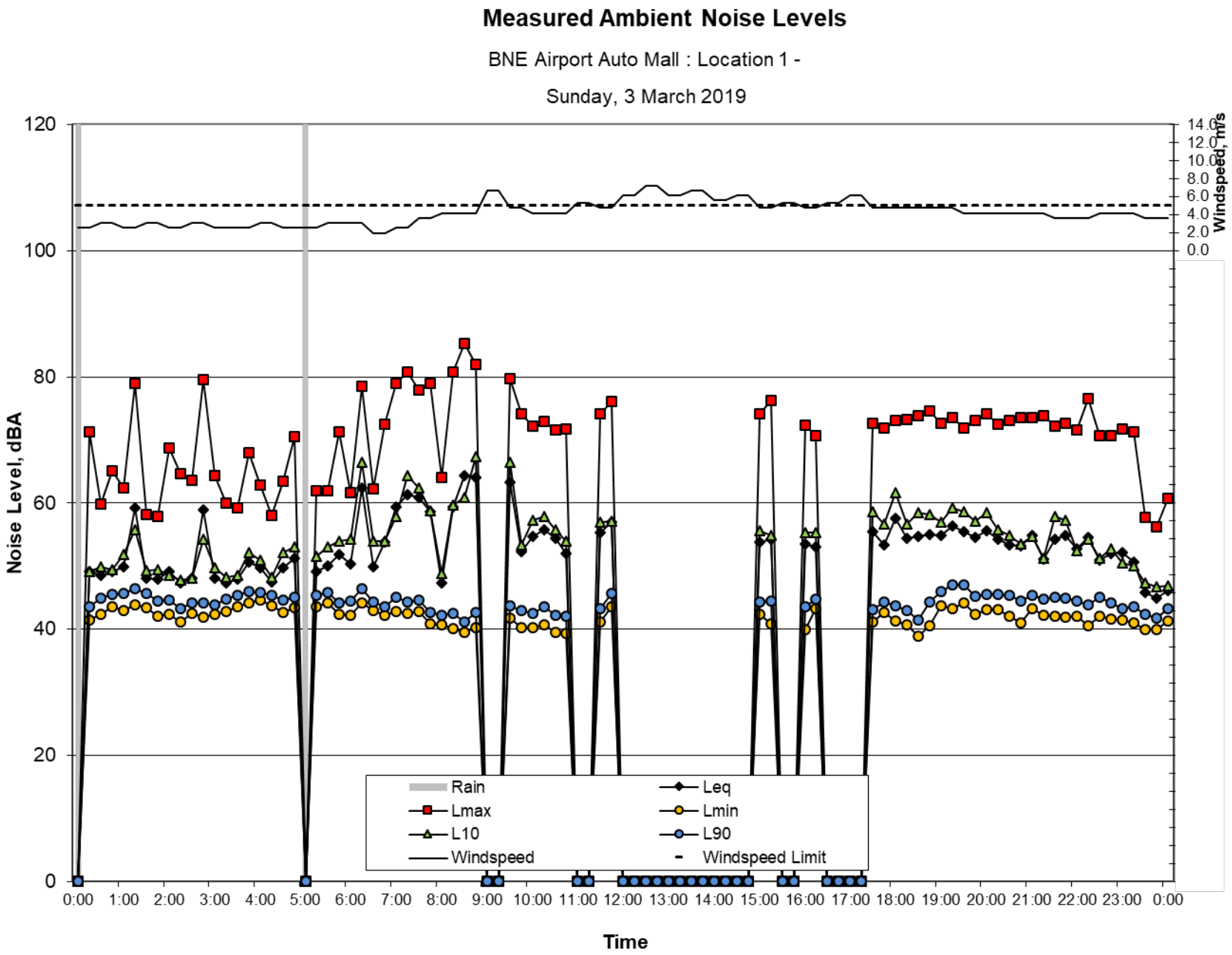
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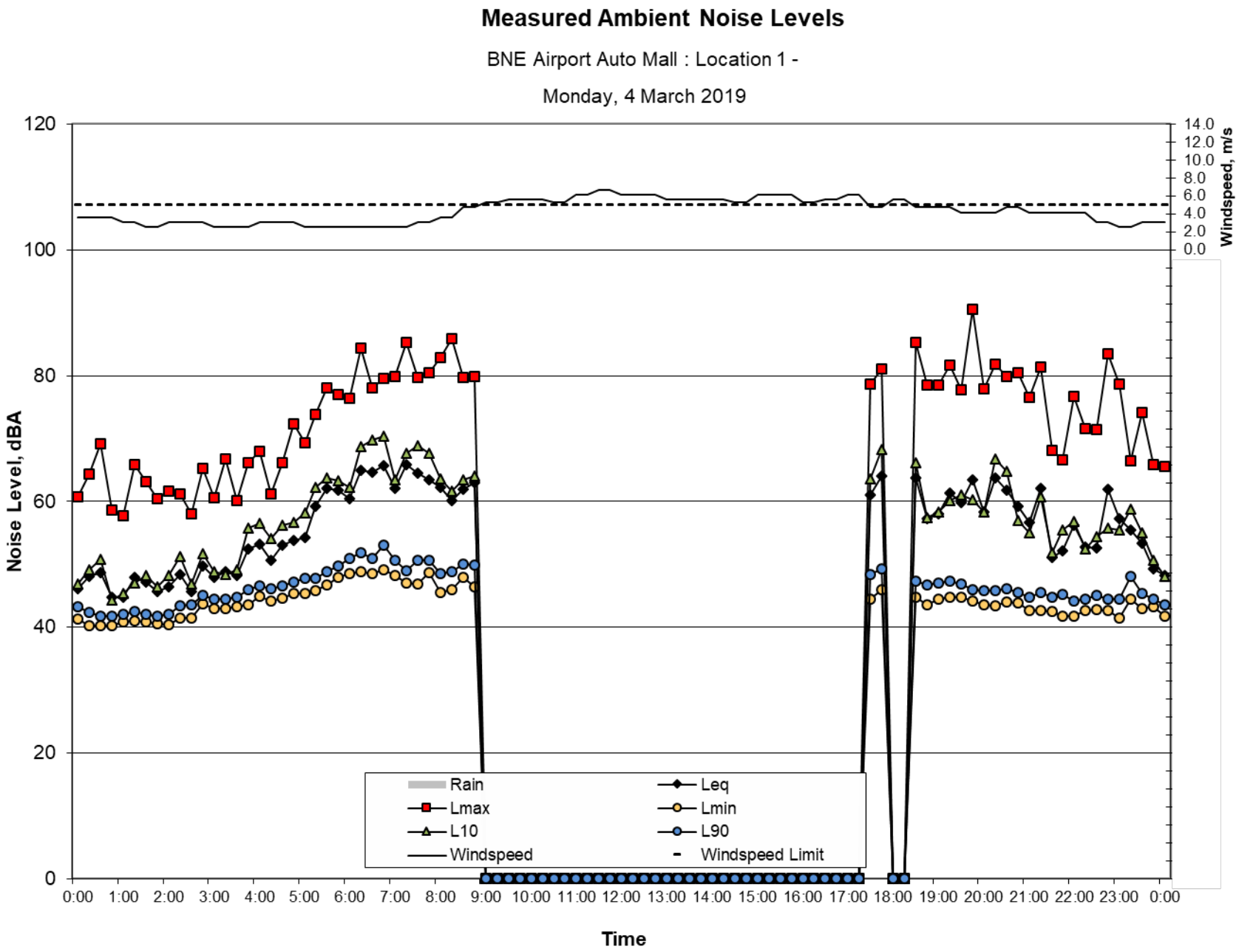
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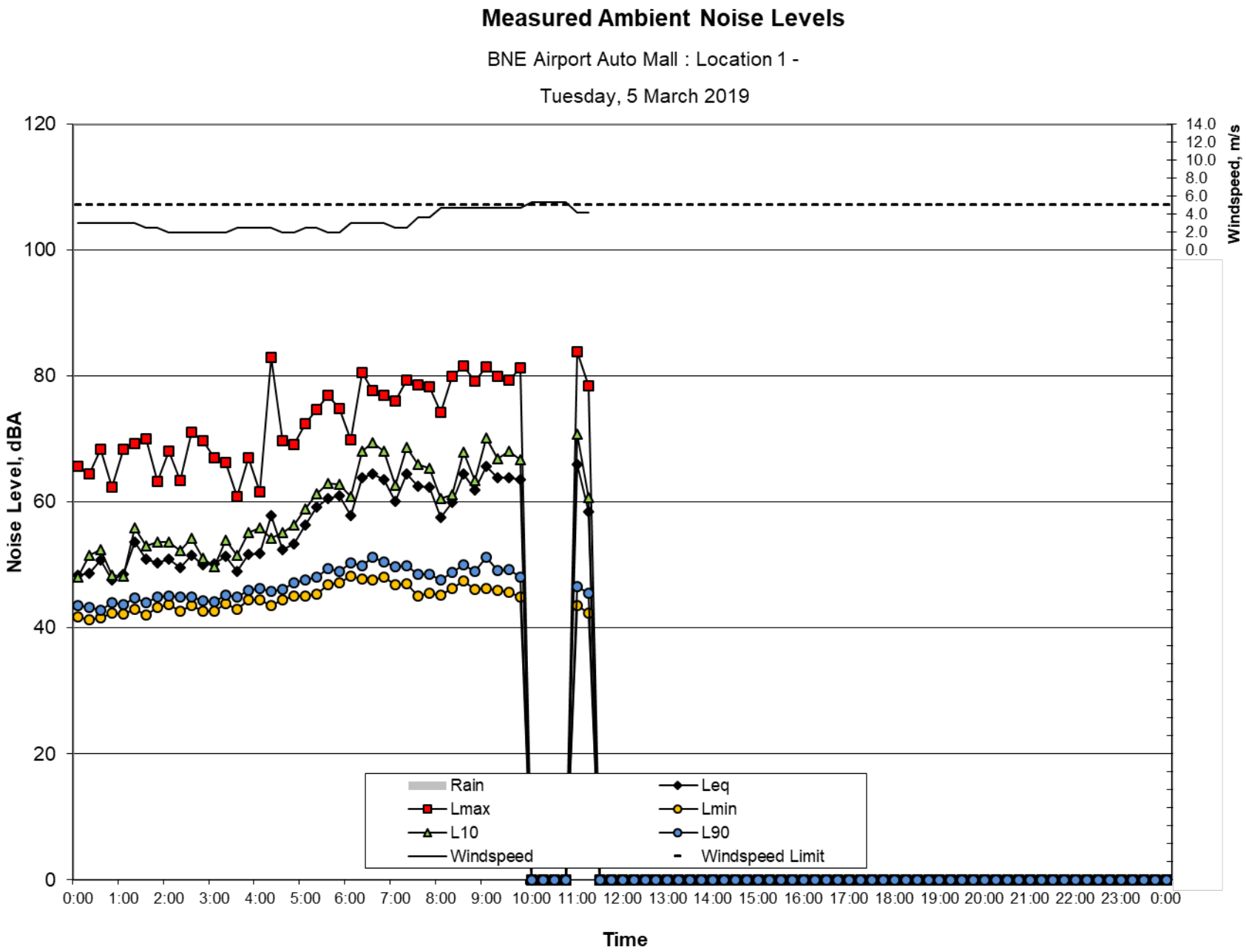
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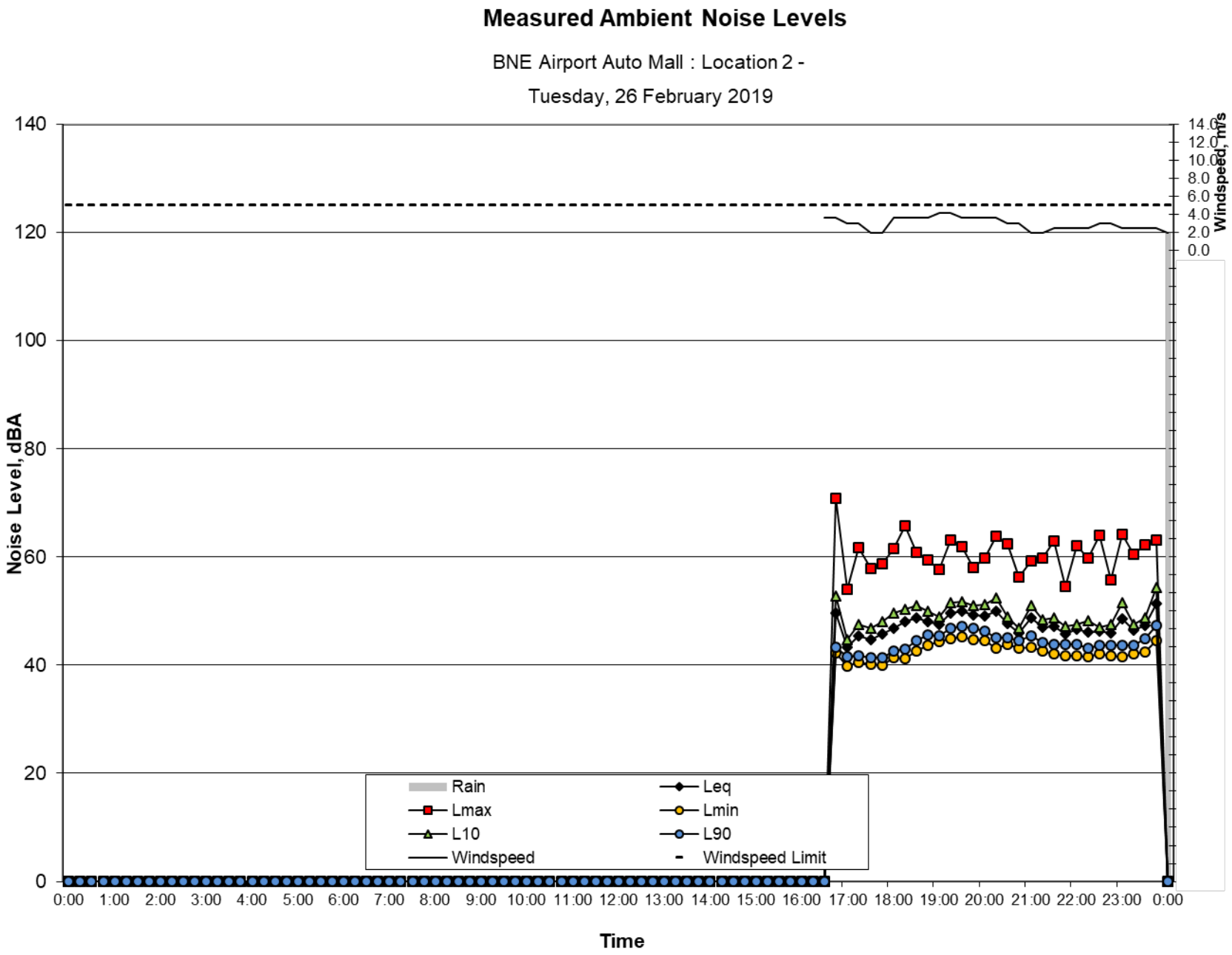
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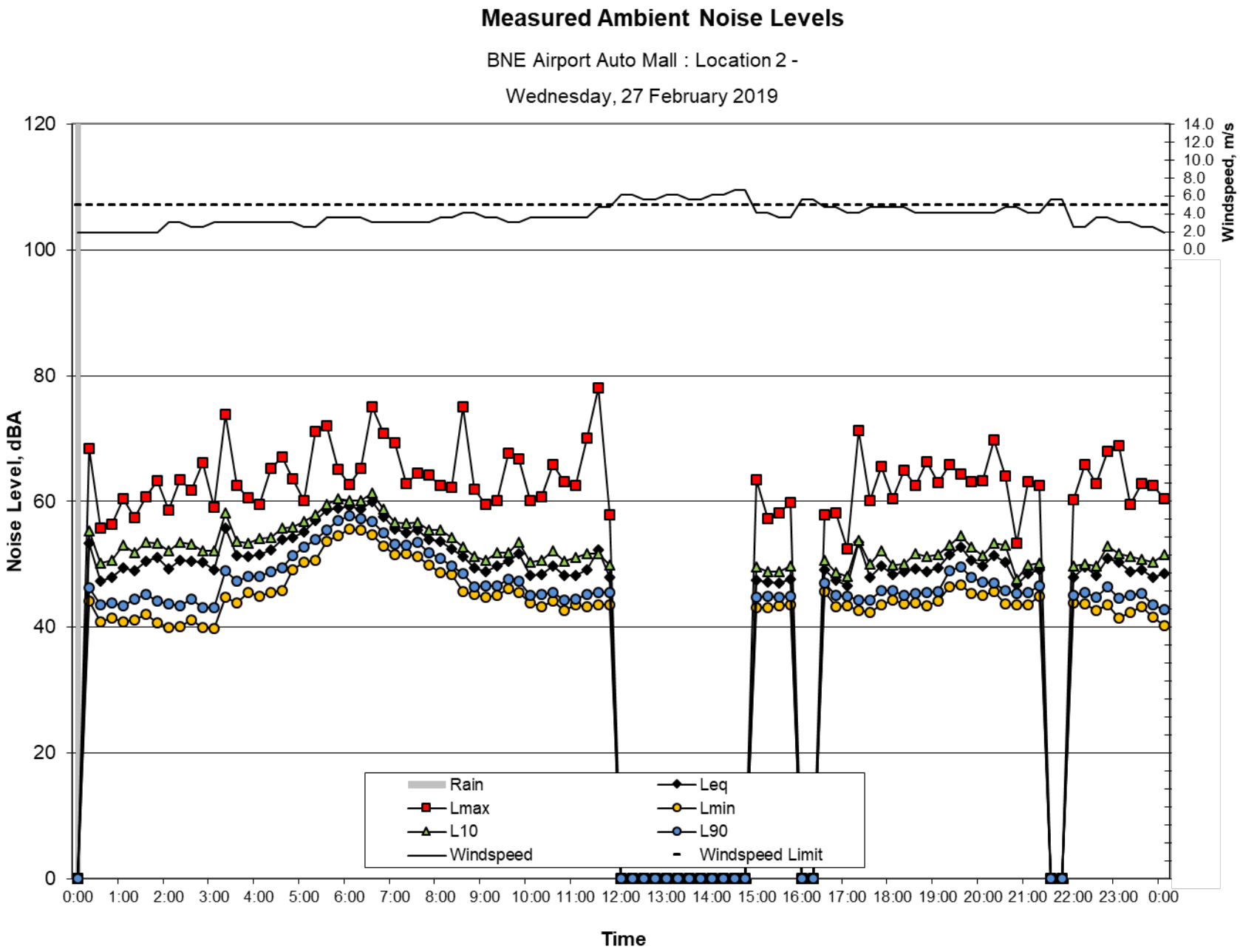
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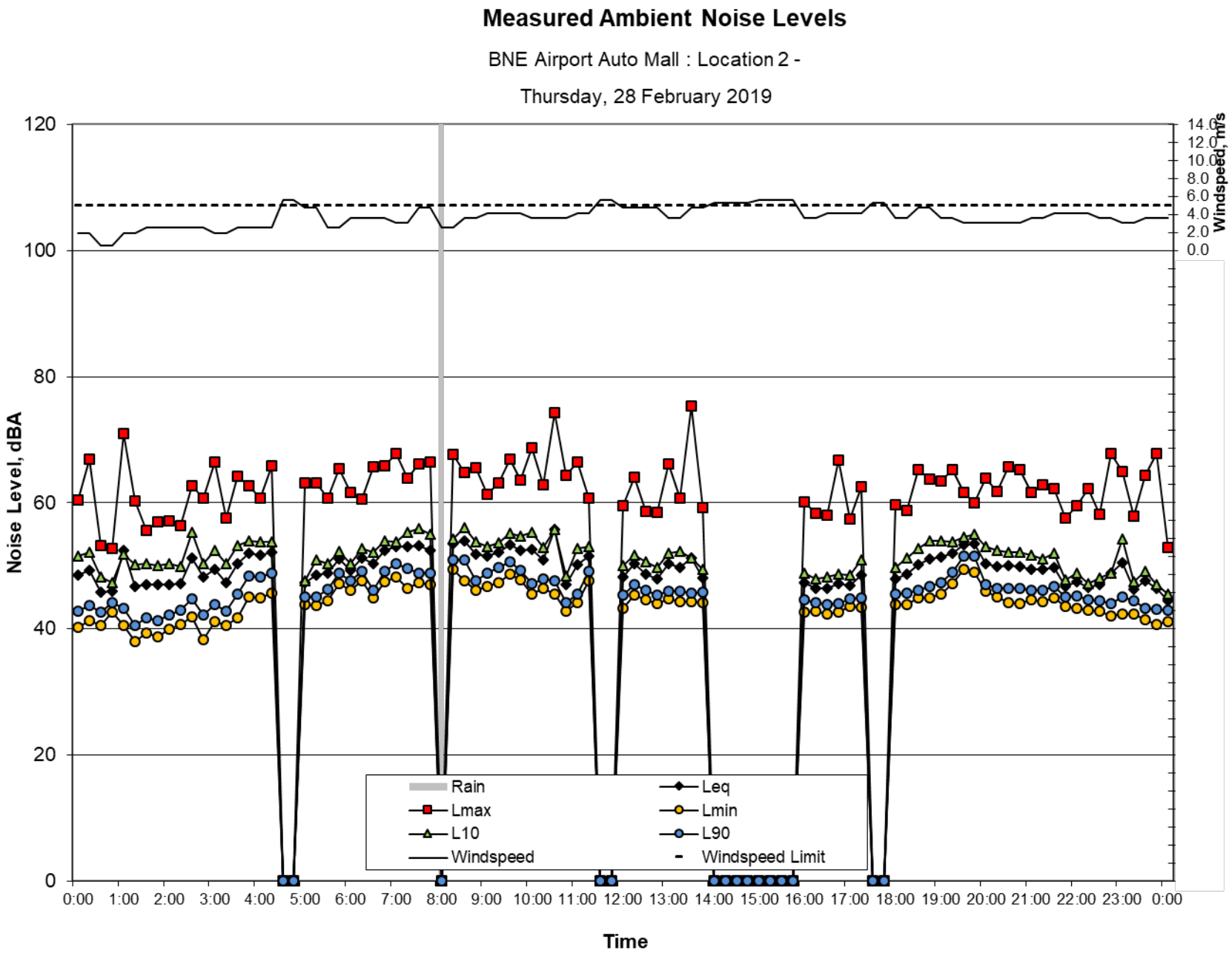
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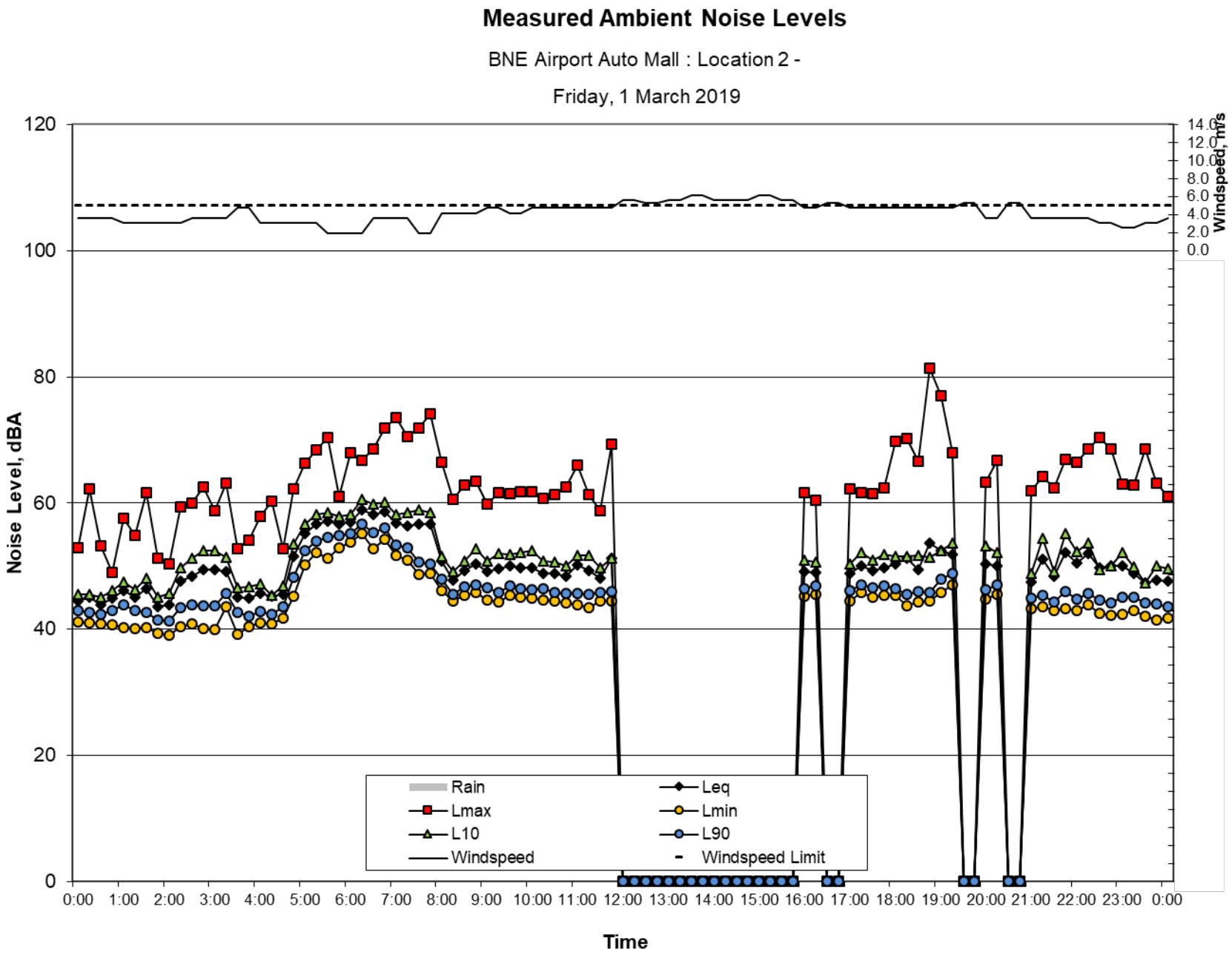
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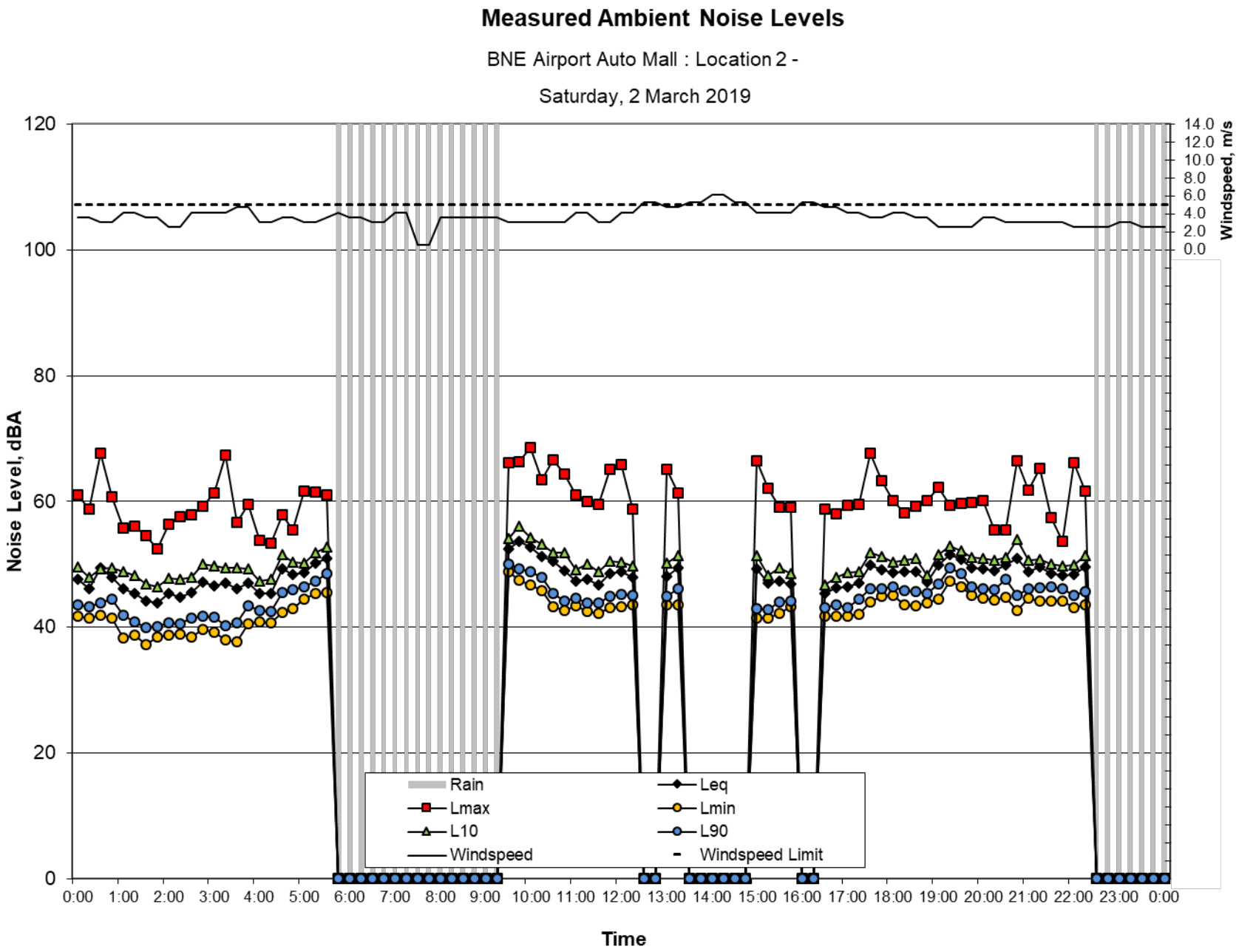
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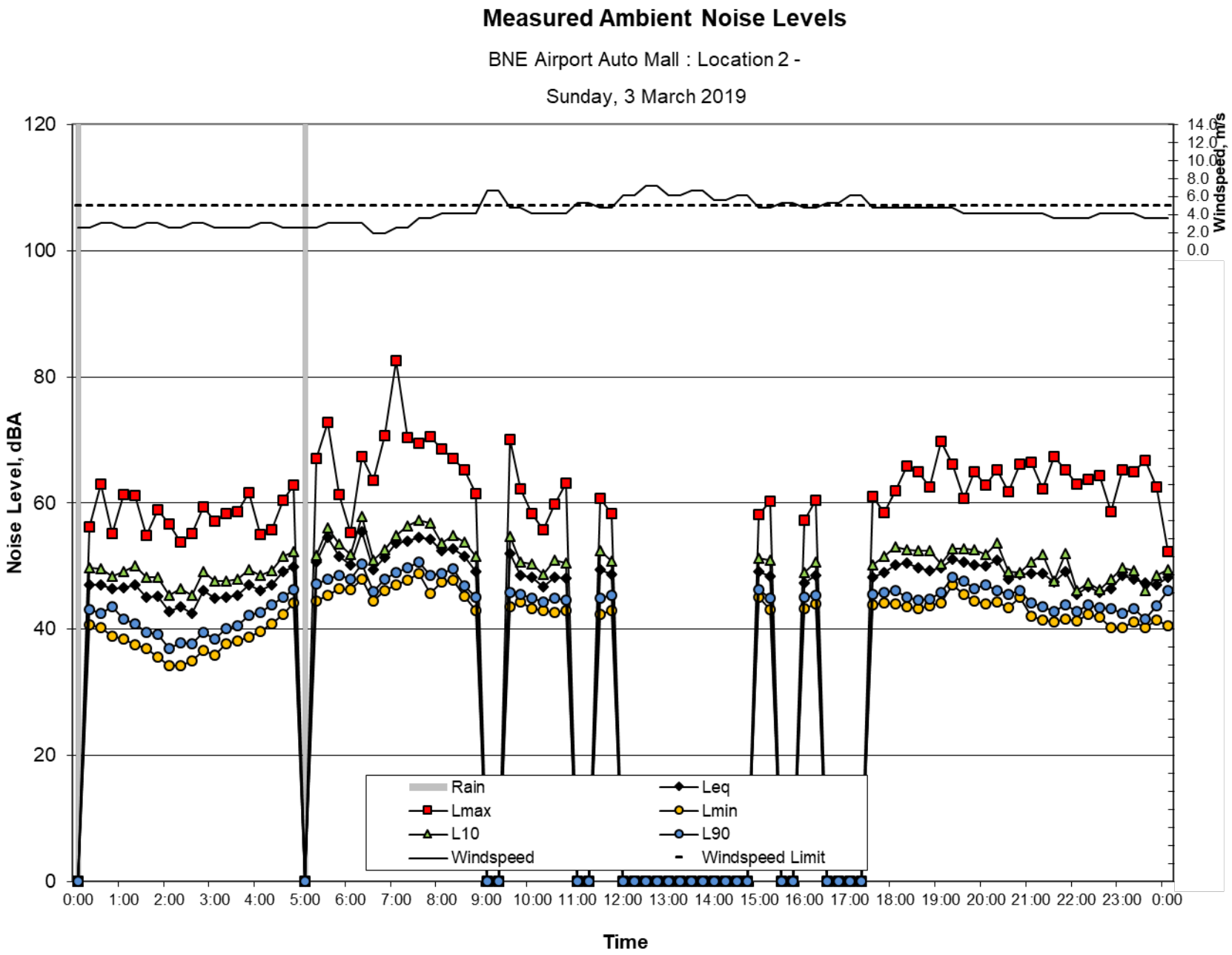
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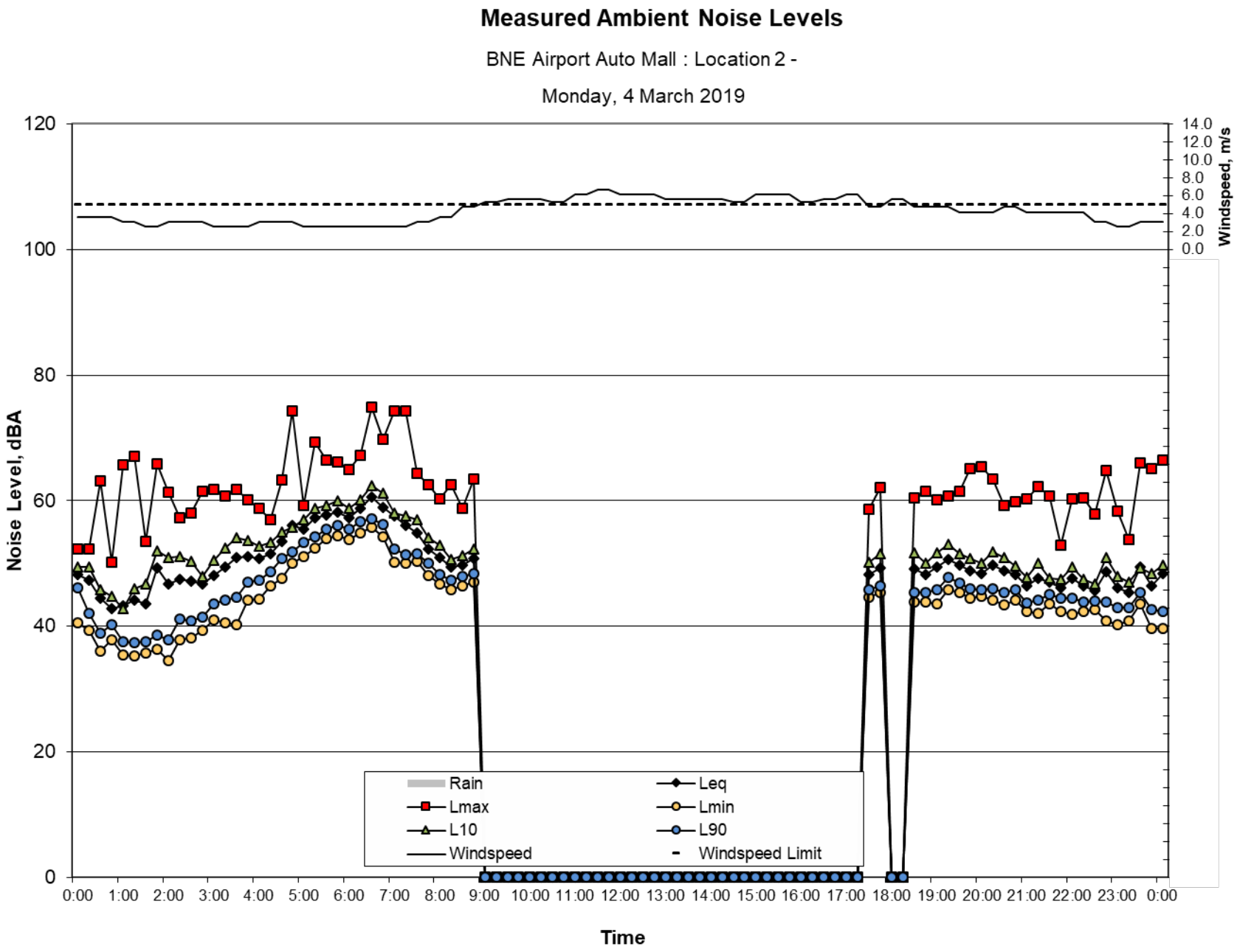
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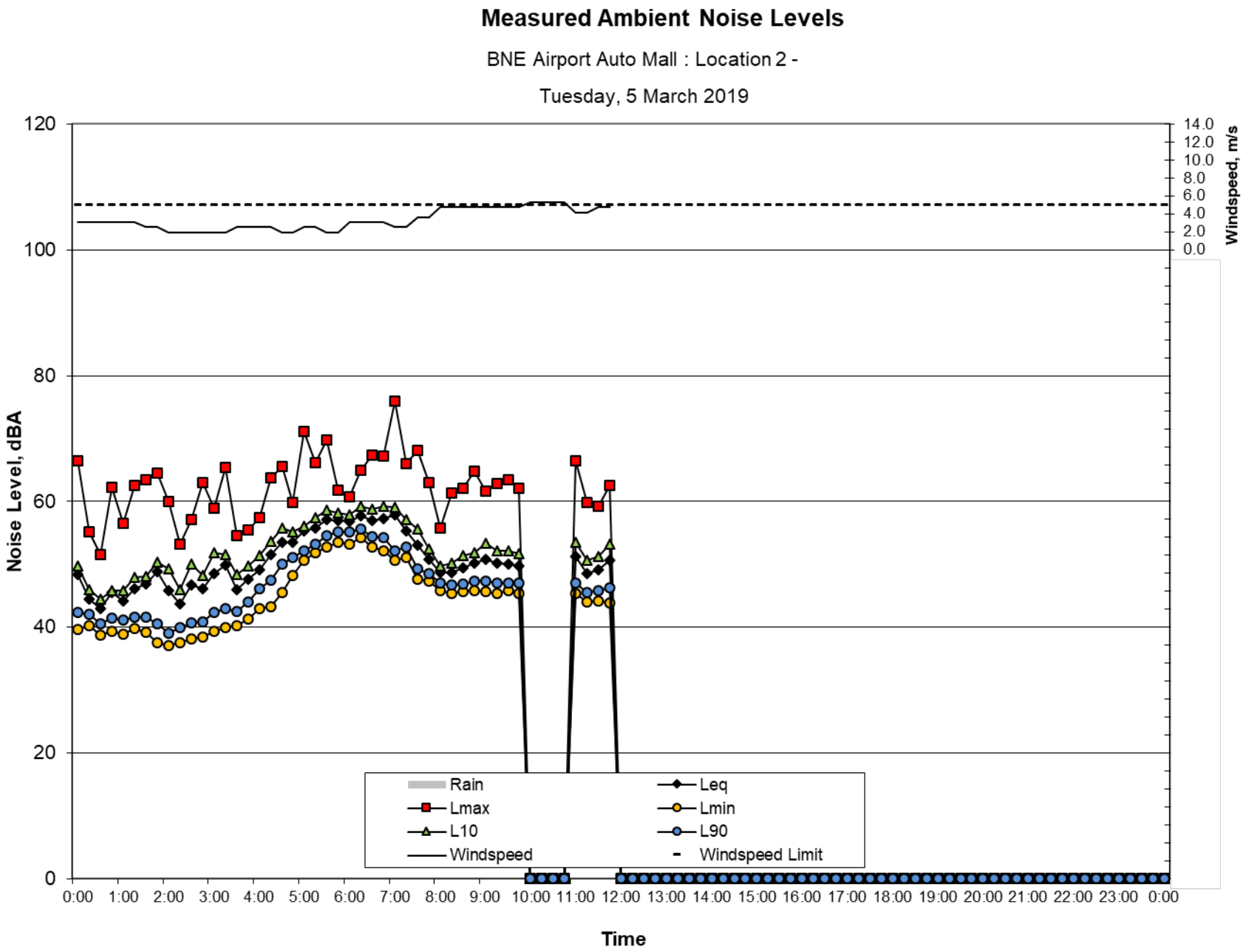
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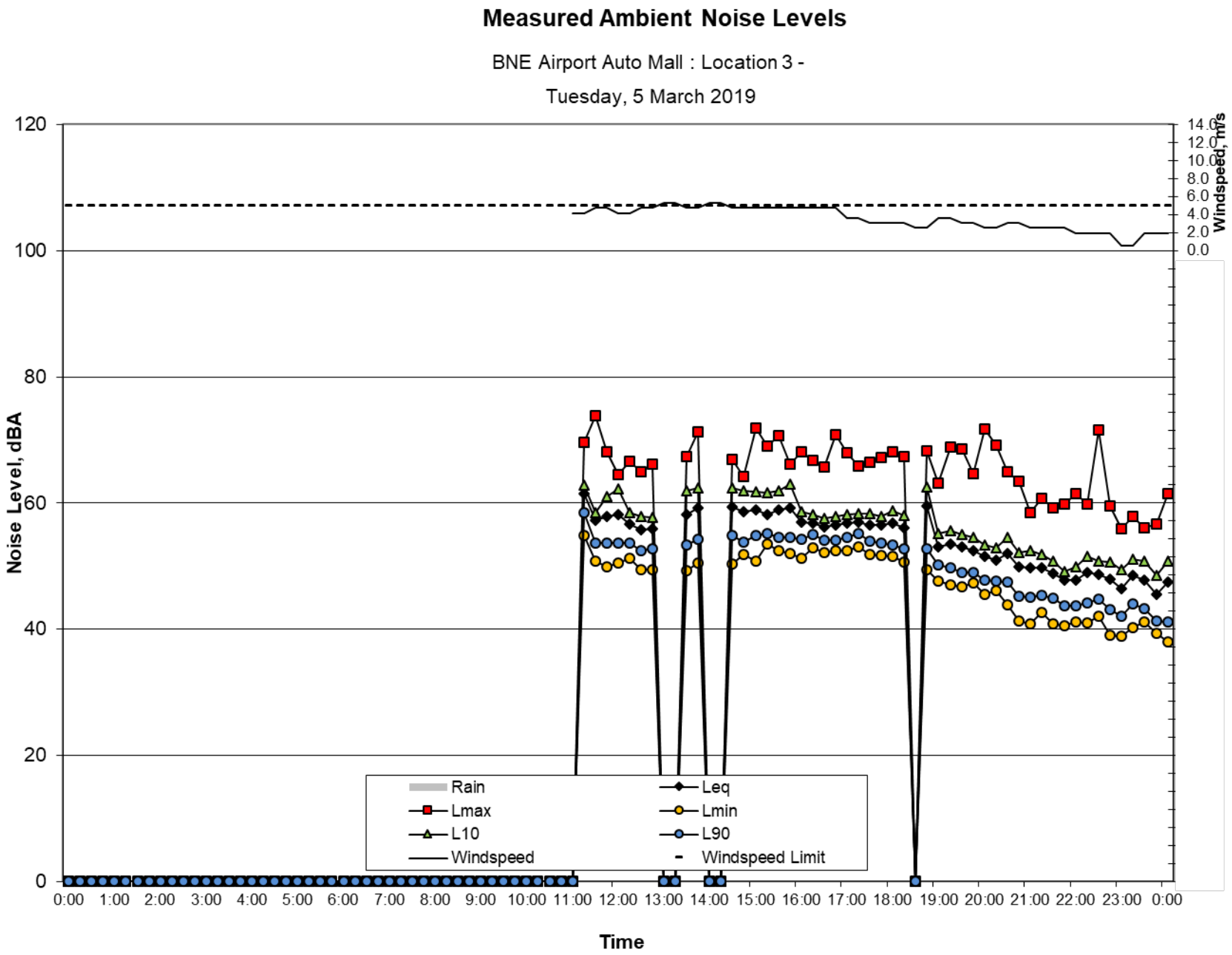
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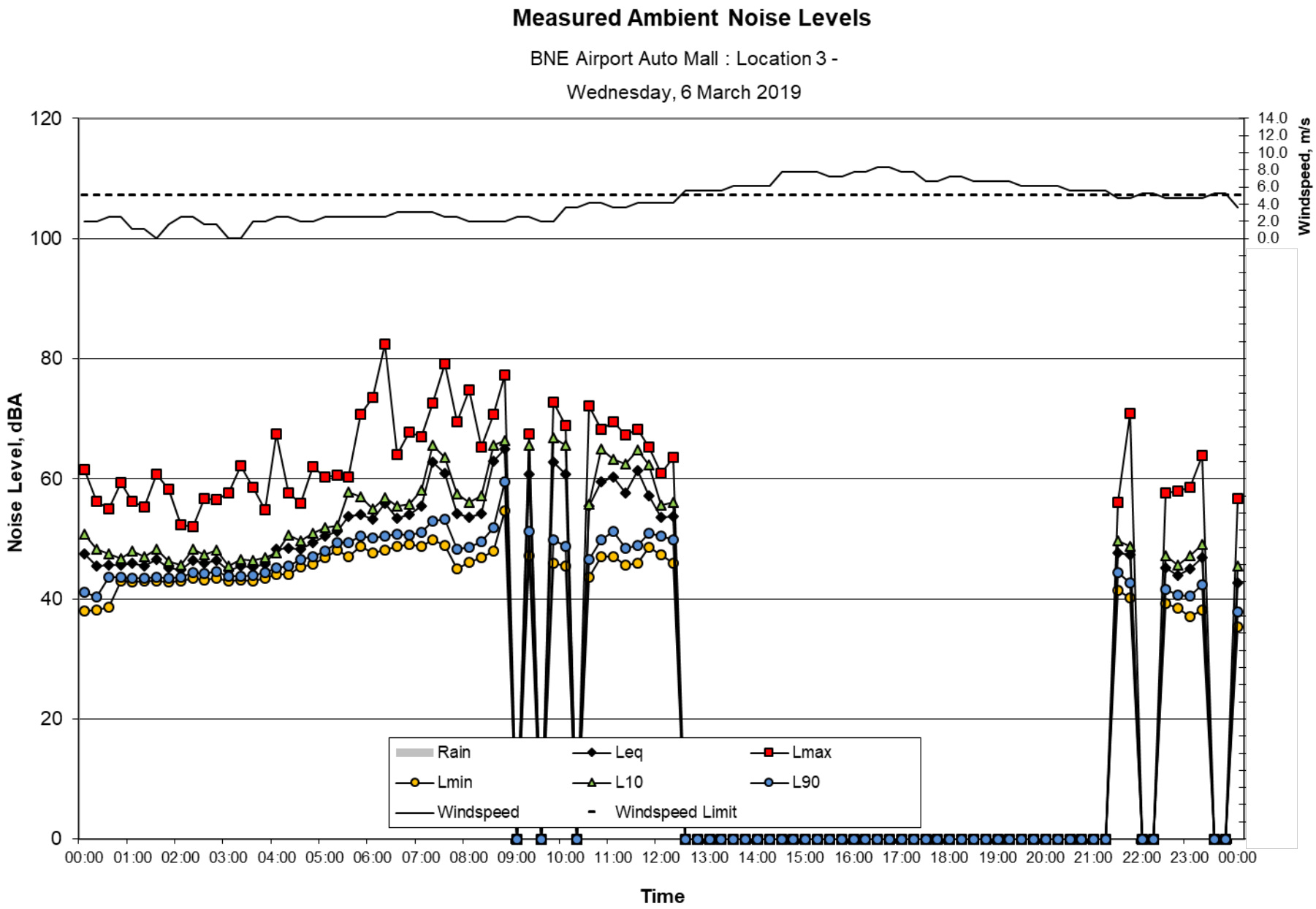
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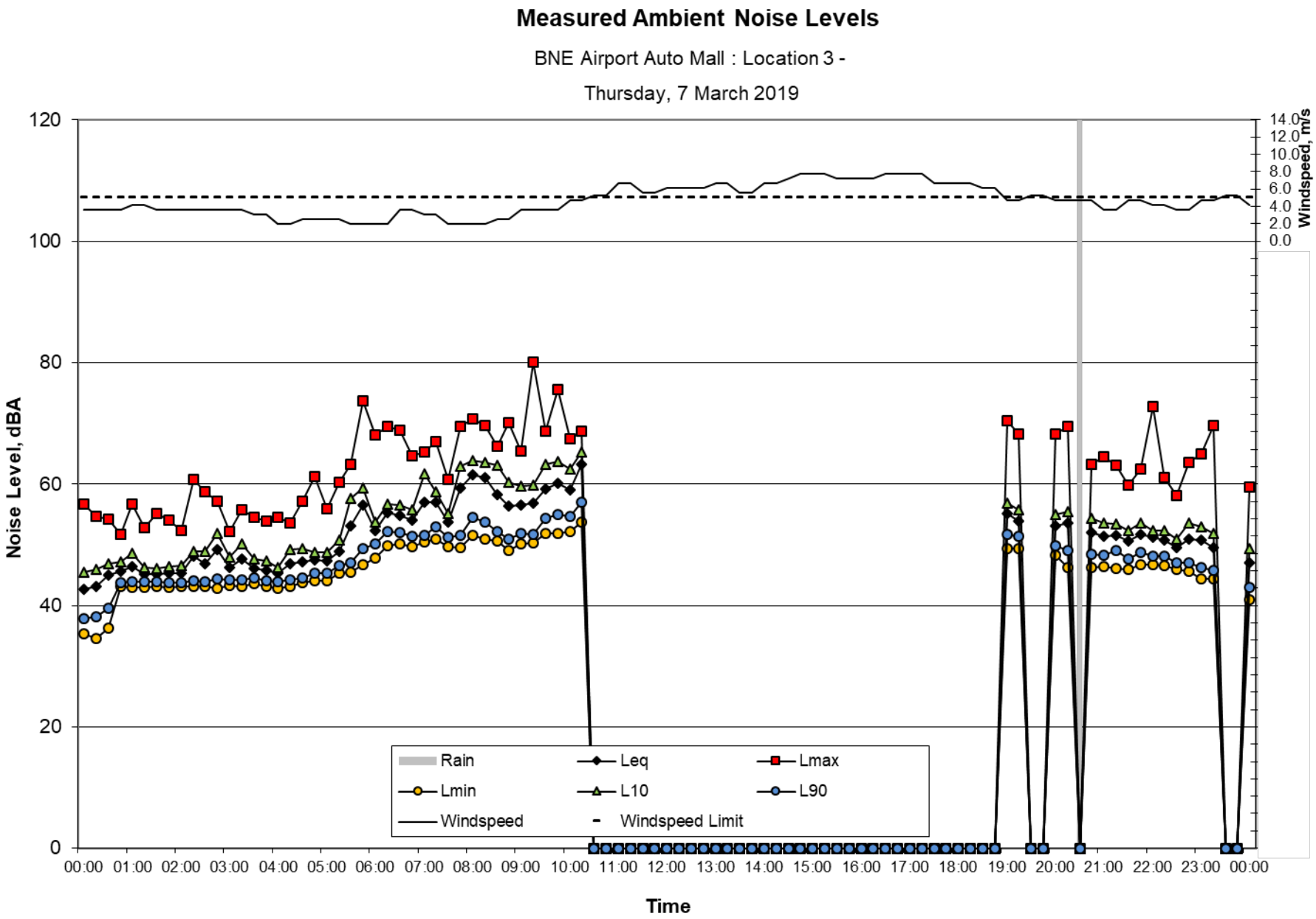
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Windspeed, m/s
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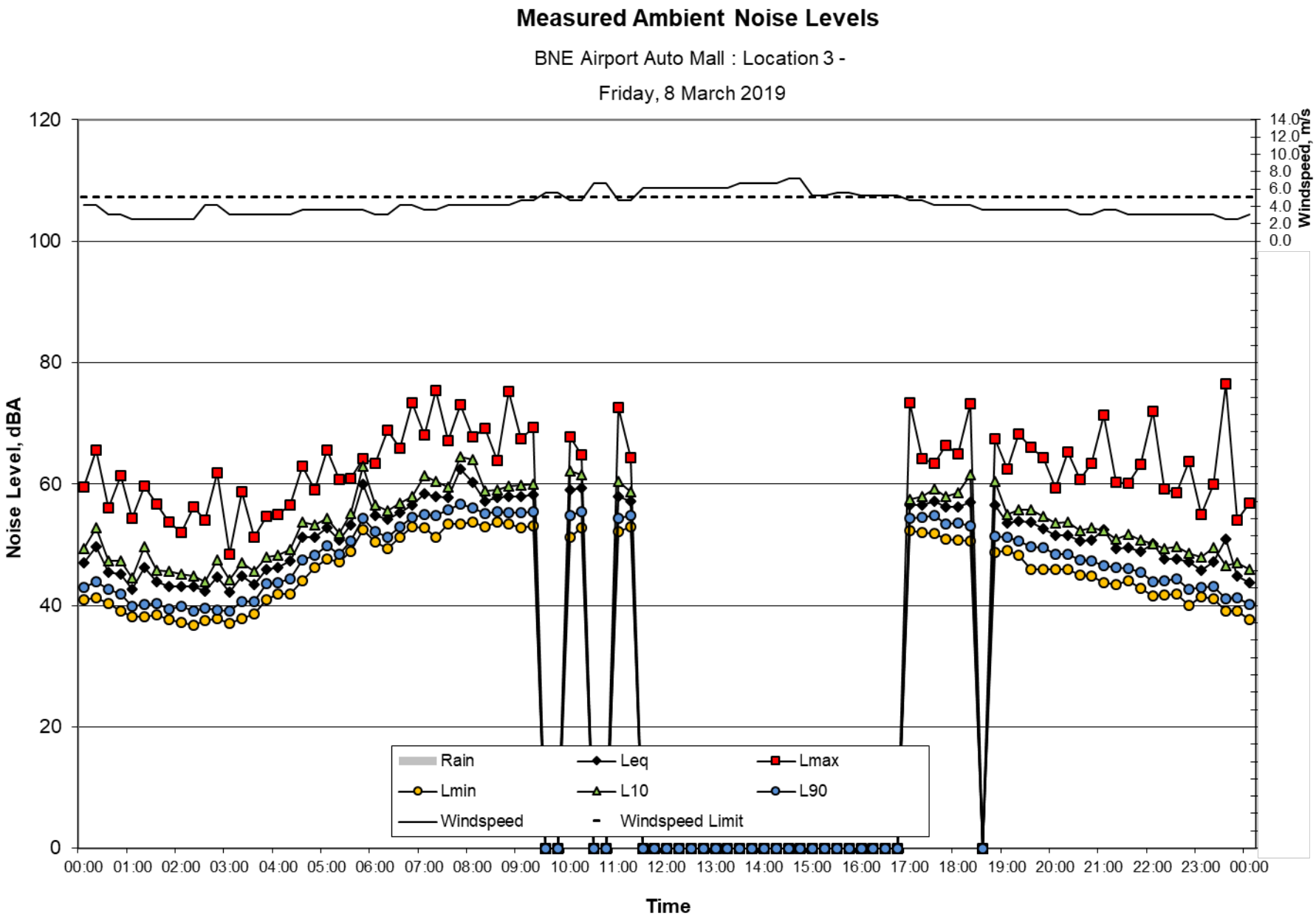
Windspeed Limit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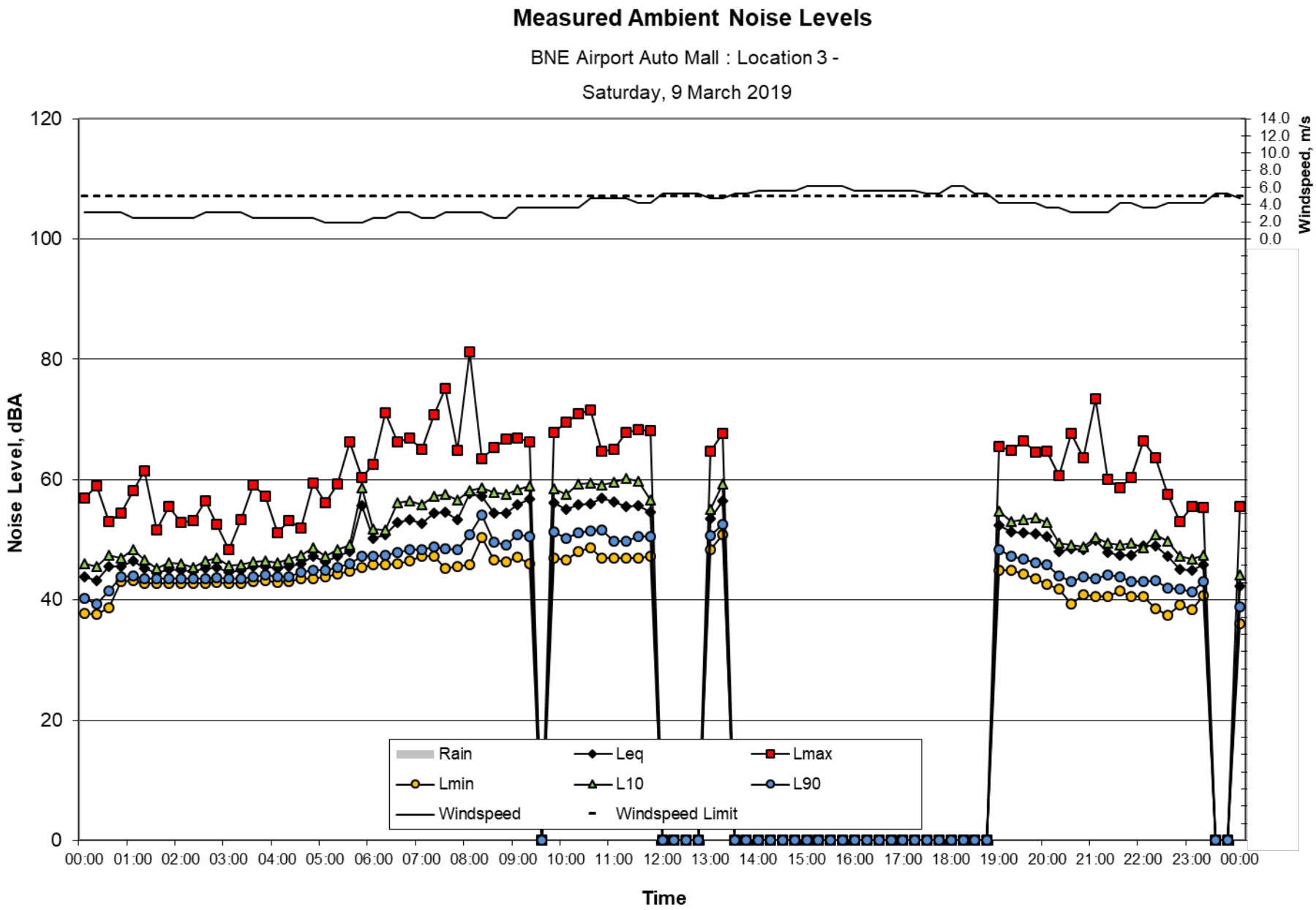
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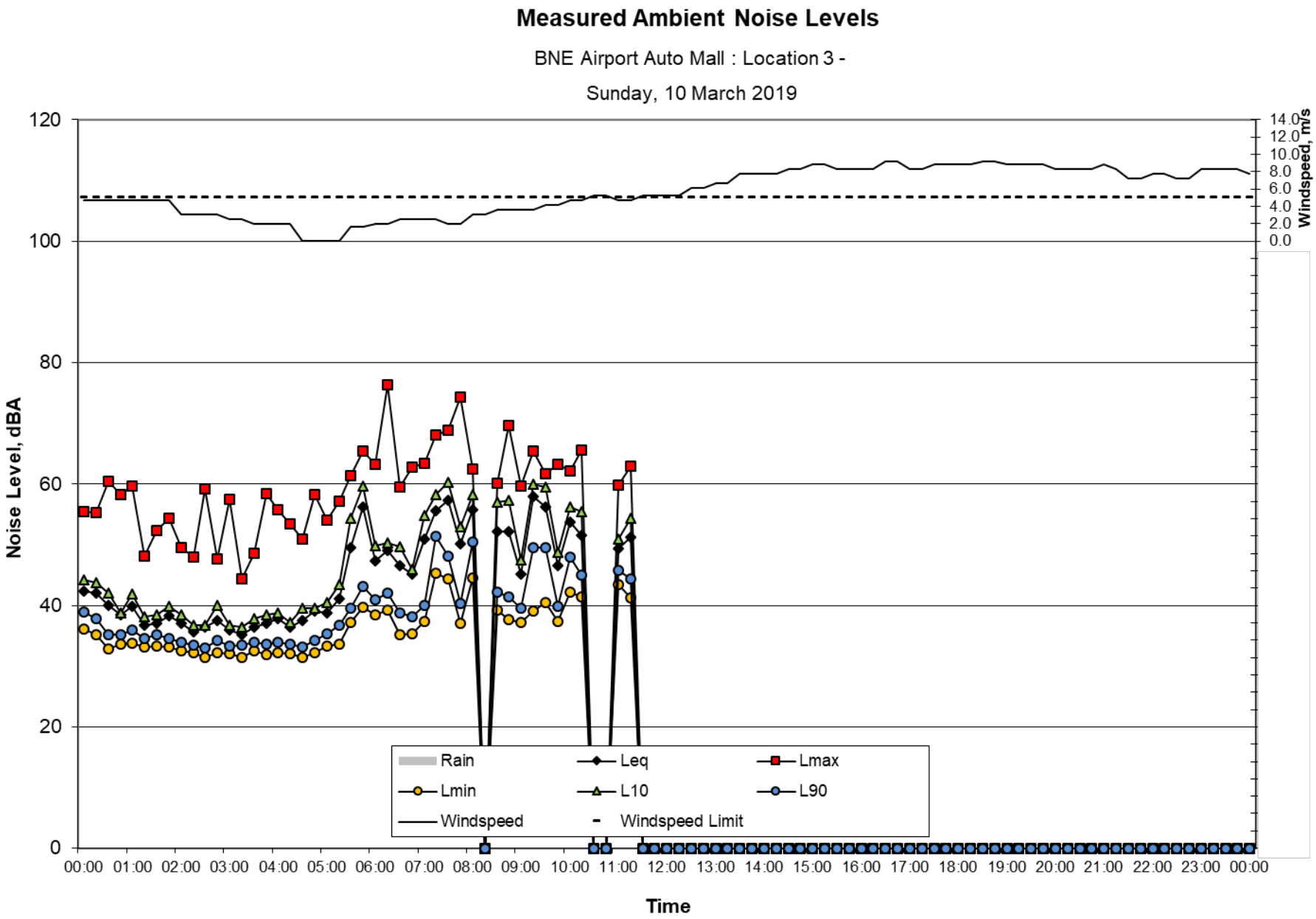
Windspeed
Windspeed Limit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BNE Airport Auto Mall : Location 3 -
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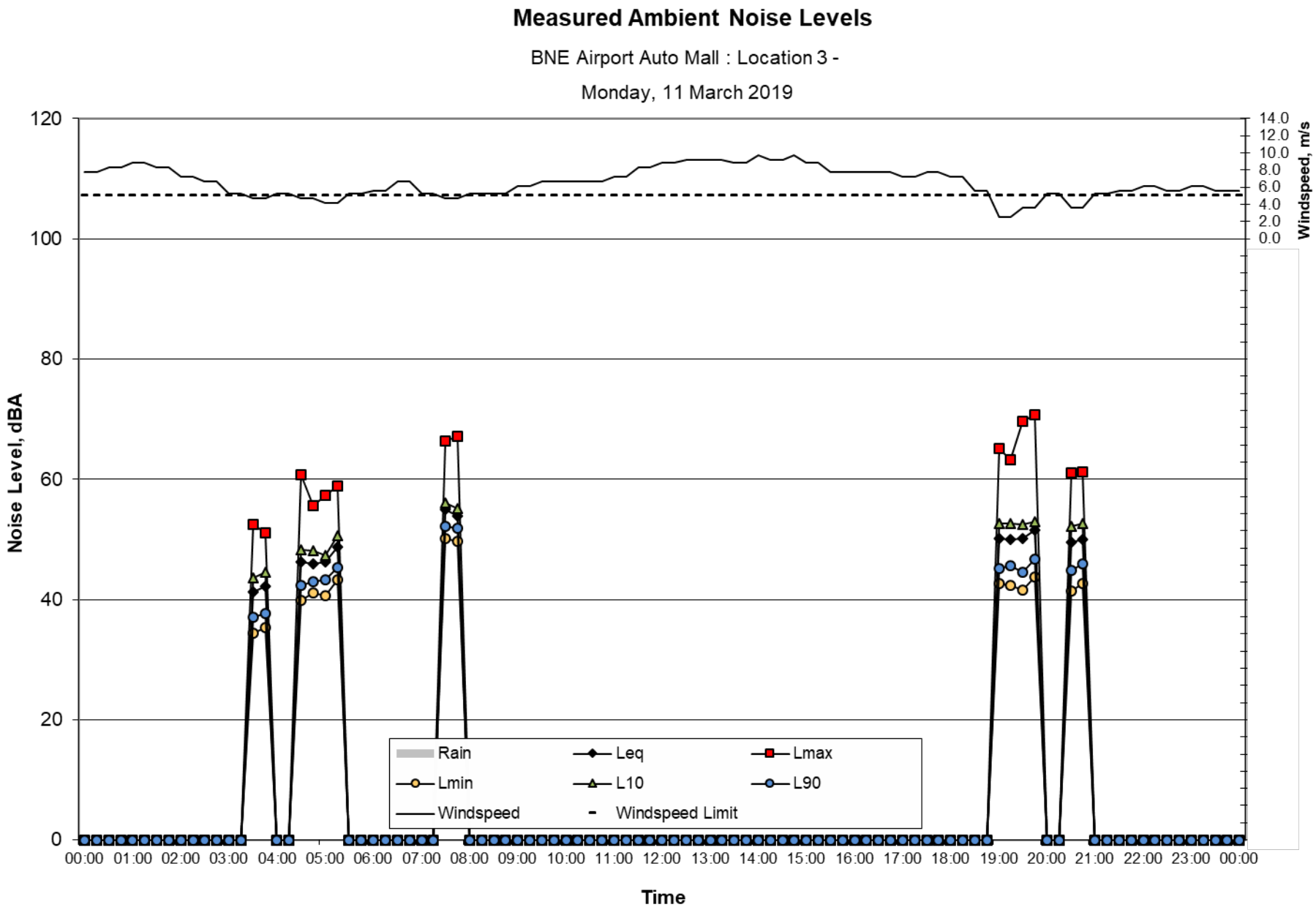
Windspeed, m/s
Time
Rain
Leq
Lmax
Lmin
L10
L90
Windspeed
Windspeed Limit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Time
Rain
Leq
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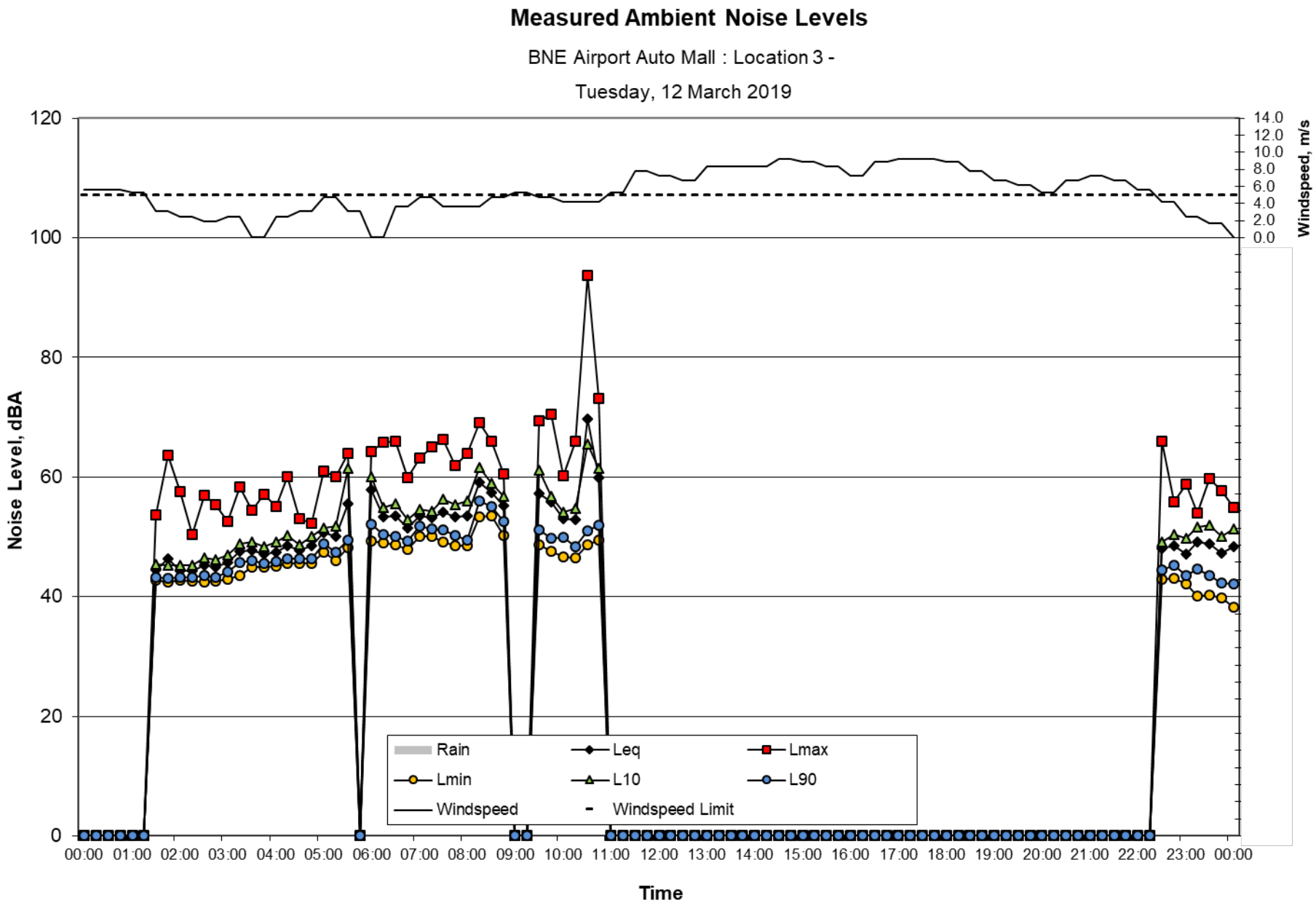
Windspeed
Windspeed Limit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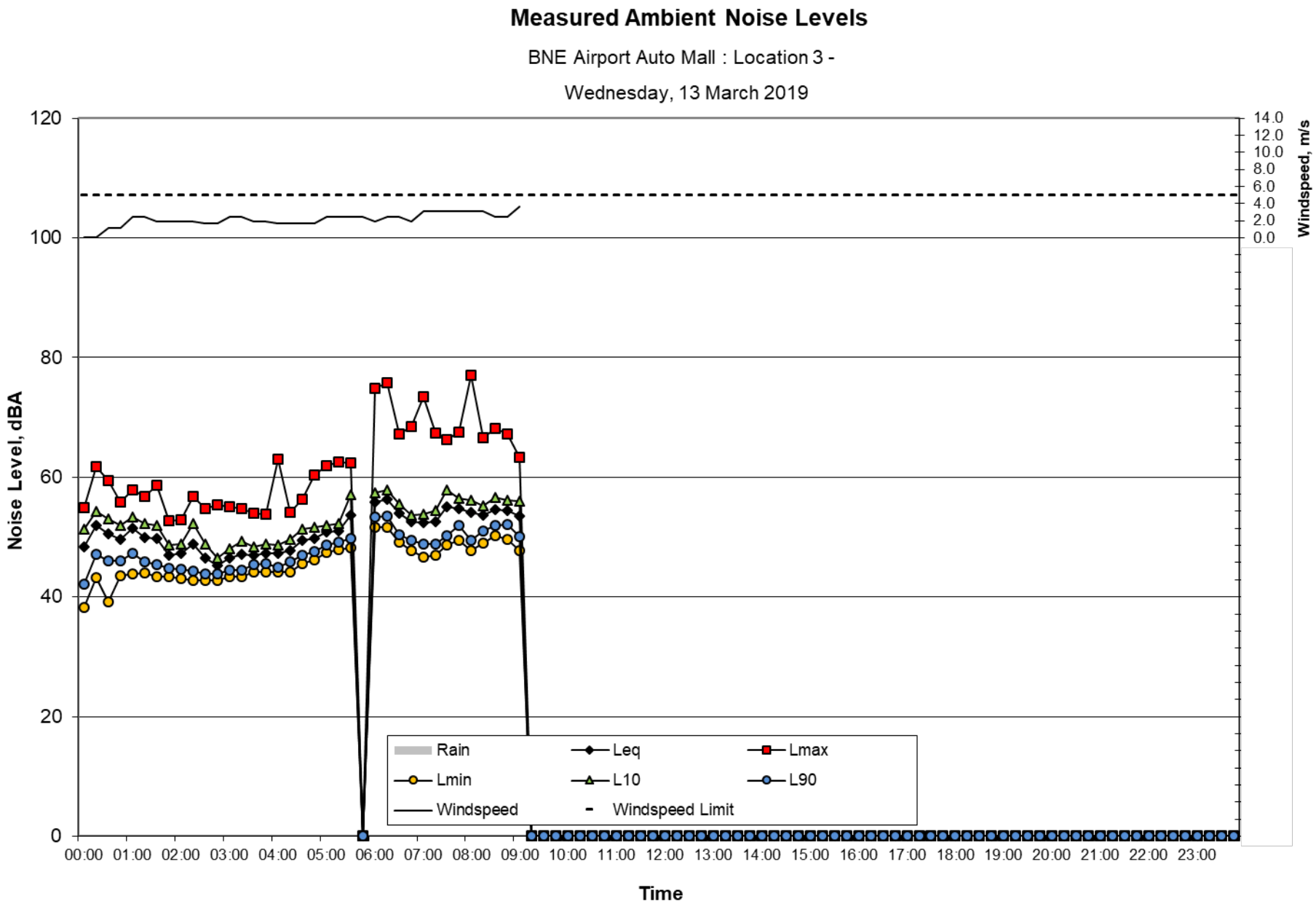
Lmin
L10
L90
Windspeed
Windspeed Limit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Noise Level, dBA
Windspeed, m/s
Time
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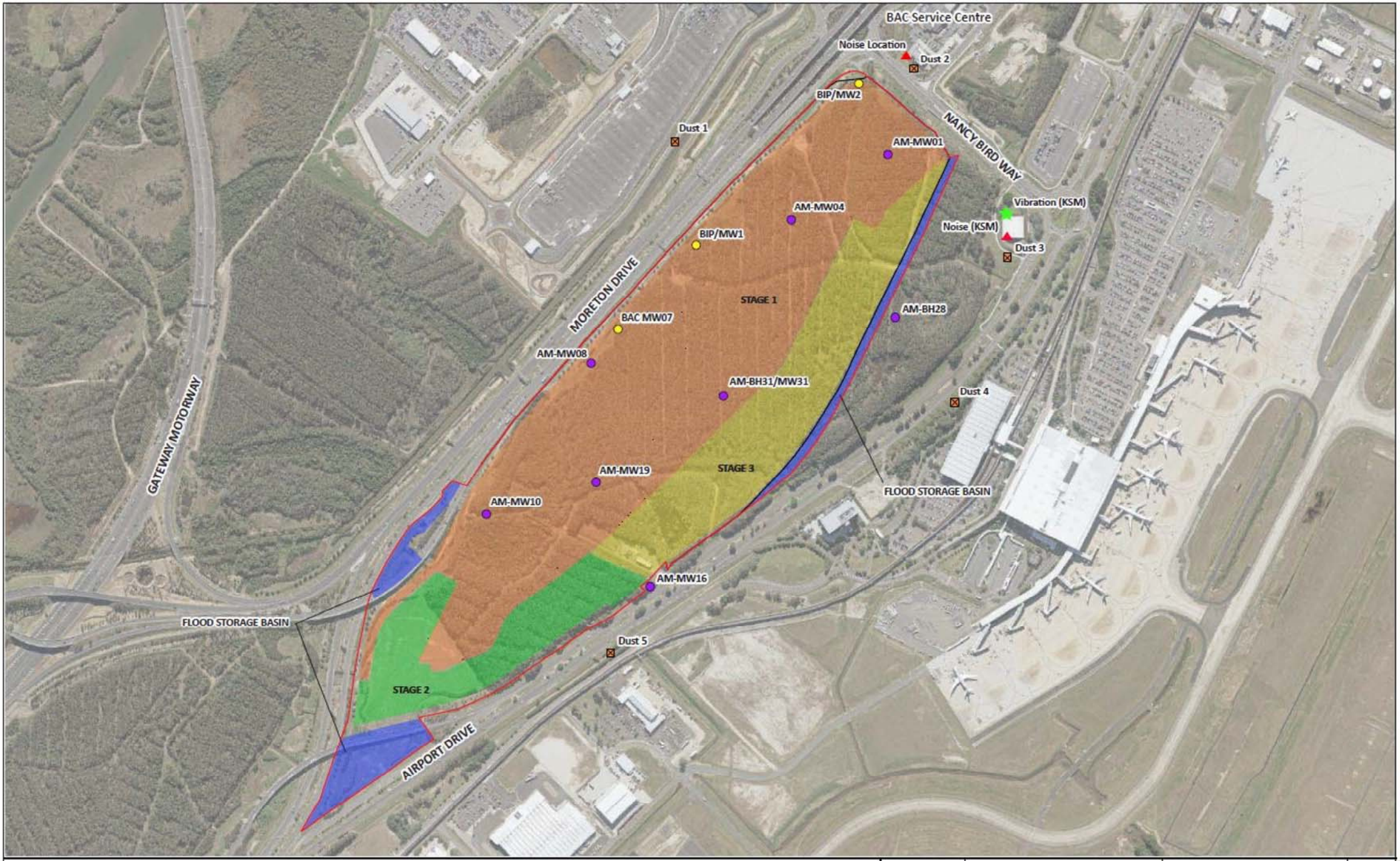
100
80
60
40
20
0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
00:00 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00
Rain
Leq
Lmax
Lmin
L10
L90
Windspeed
Windspeed Limit

B

PSK Environmental Noise Sampling Location Plan



LEGEND

- Monitoring Wells sampled for the baseline
- Monitoring Wells included for reference
- Baseline Noise Monitoring locations
- Baseline Vibration Monitoring location at Kingsford Smith Memorial
- Baseline Dust Monitoring locations

Notes:
- Baseplan extracted from ImageGlobe 2016. Extracted 06/11/2017
- Stages of development extracted from Brisbane Airport Auto Mall EMP Rev3, Figure 2. Stages of Development, Version 3, Job No: 255492-002

PSK Environmental

Client: Brisbane Airport Corporation		Project: Baseline BAC Auto Mall Precinct	
Drawn: NK	Date: 08/12/2017	Title: SITE PLAN AND SAMPLING LOCATIONS	N
Checked: SLS	Date: 08/12/2017		
Scale: 0m – 175m		Job No.: J0517-005-003	Fig. No.: 1	Rev: 0	A3

C

Predicted Noise Levels – Contour Maps

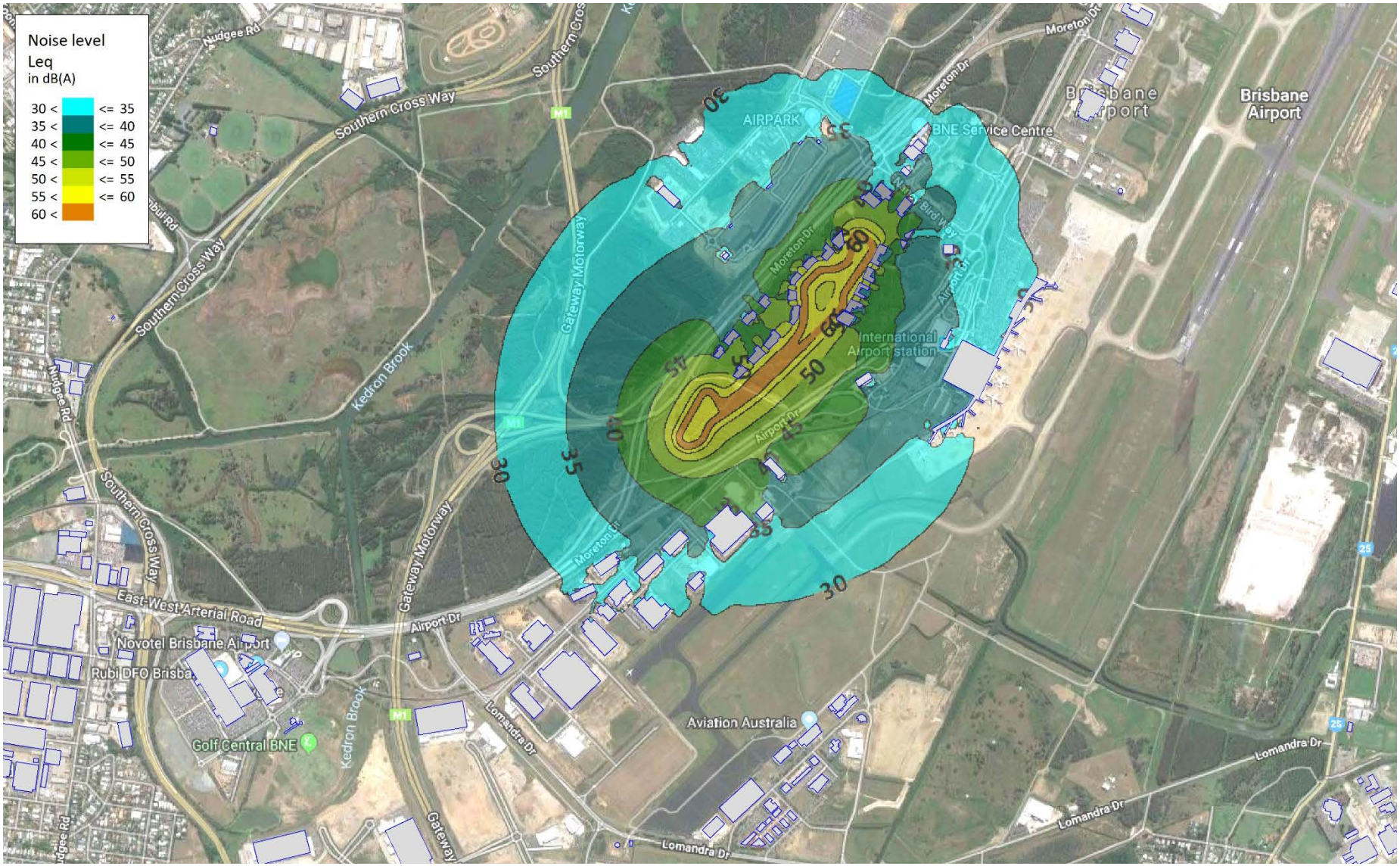


Figure B1 – Operational noise contour of Scenario 1

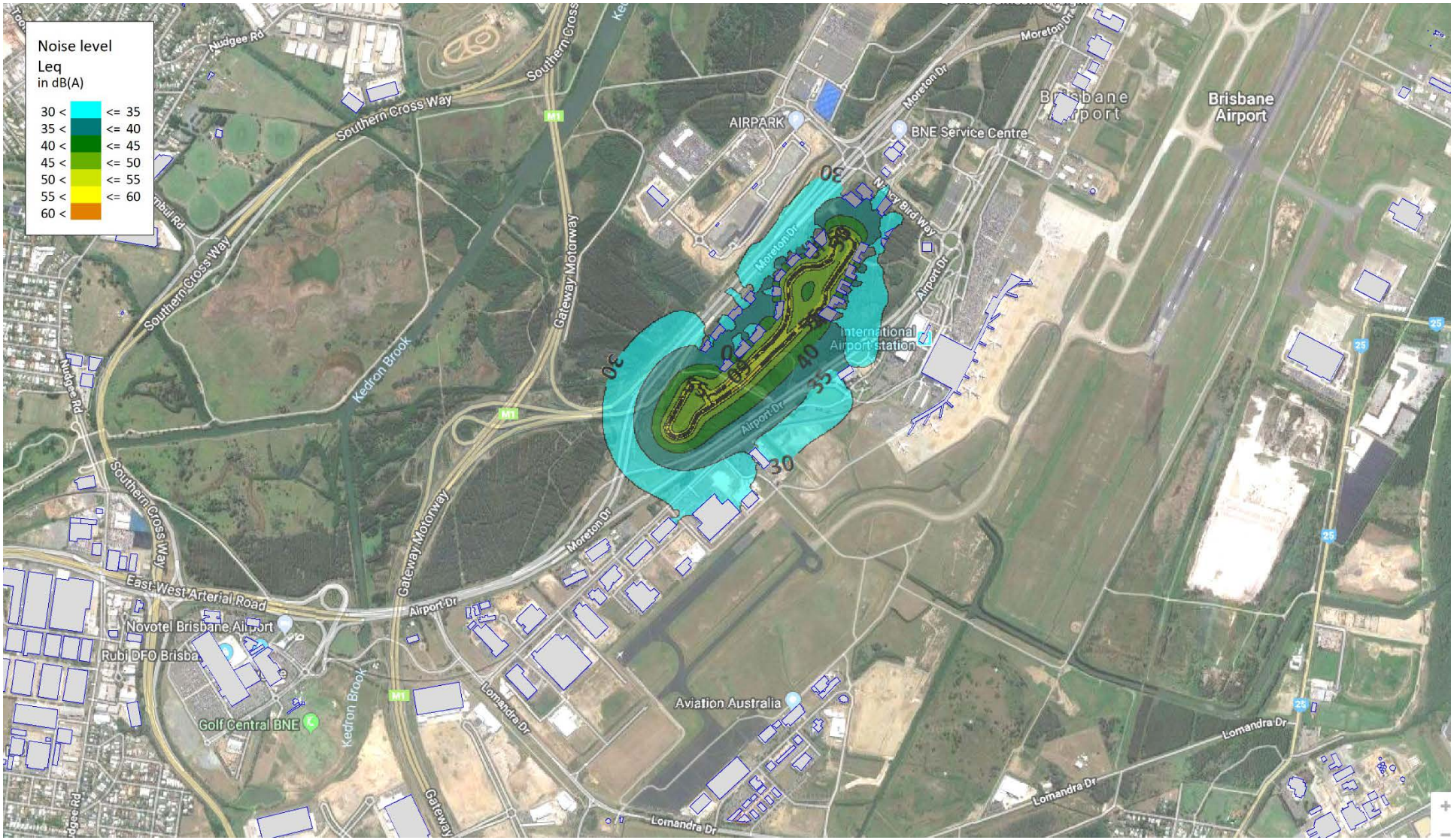


Figure B2 – Operational noise contour of Scenario 2

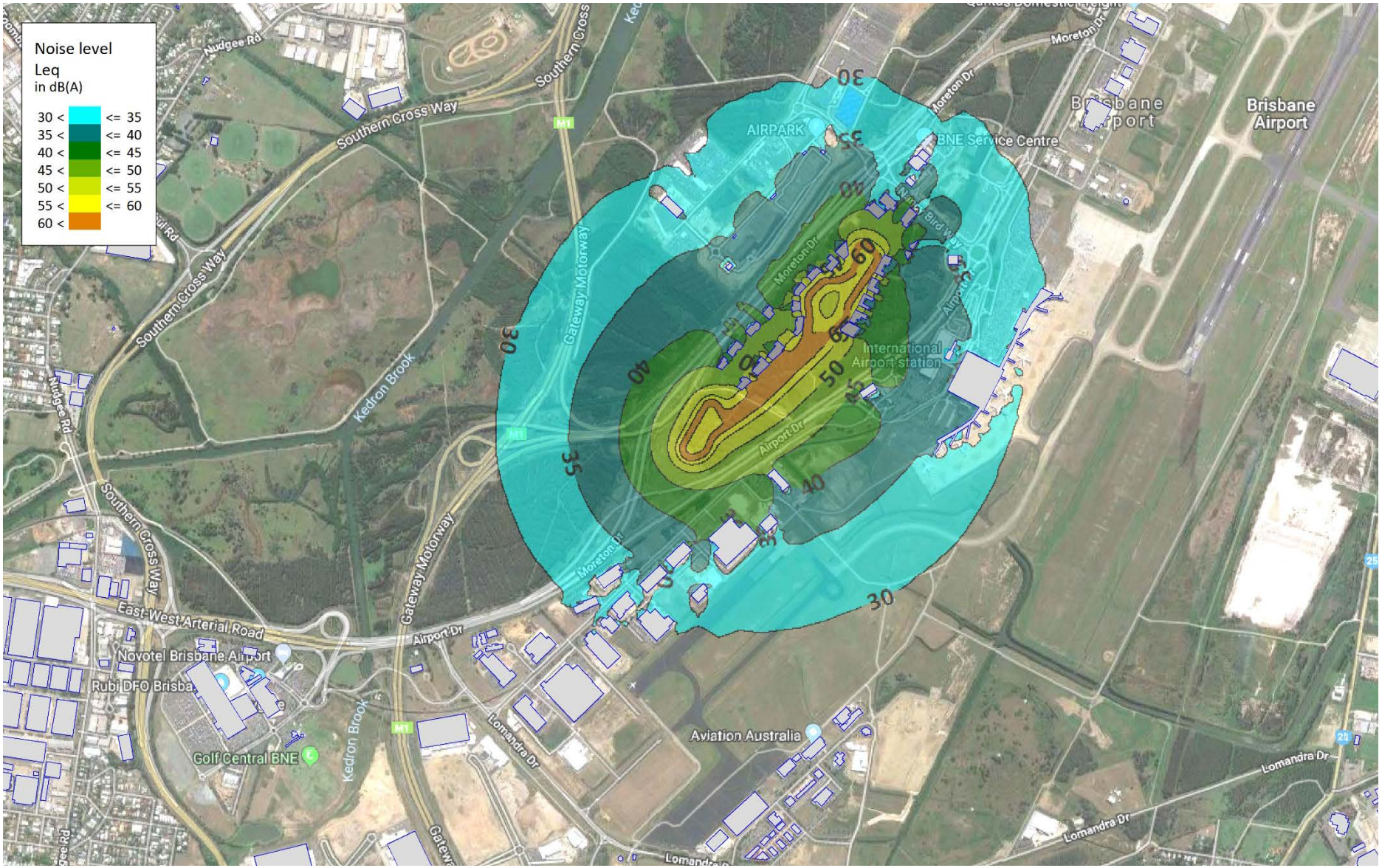


Figure B3 – Operational noise contour of Scenario 3

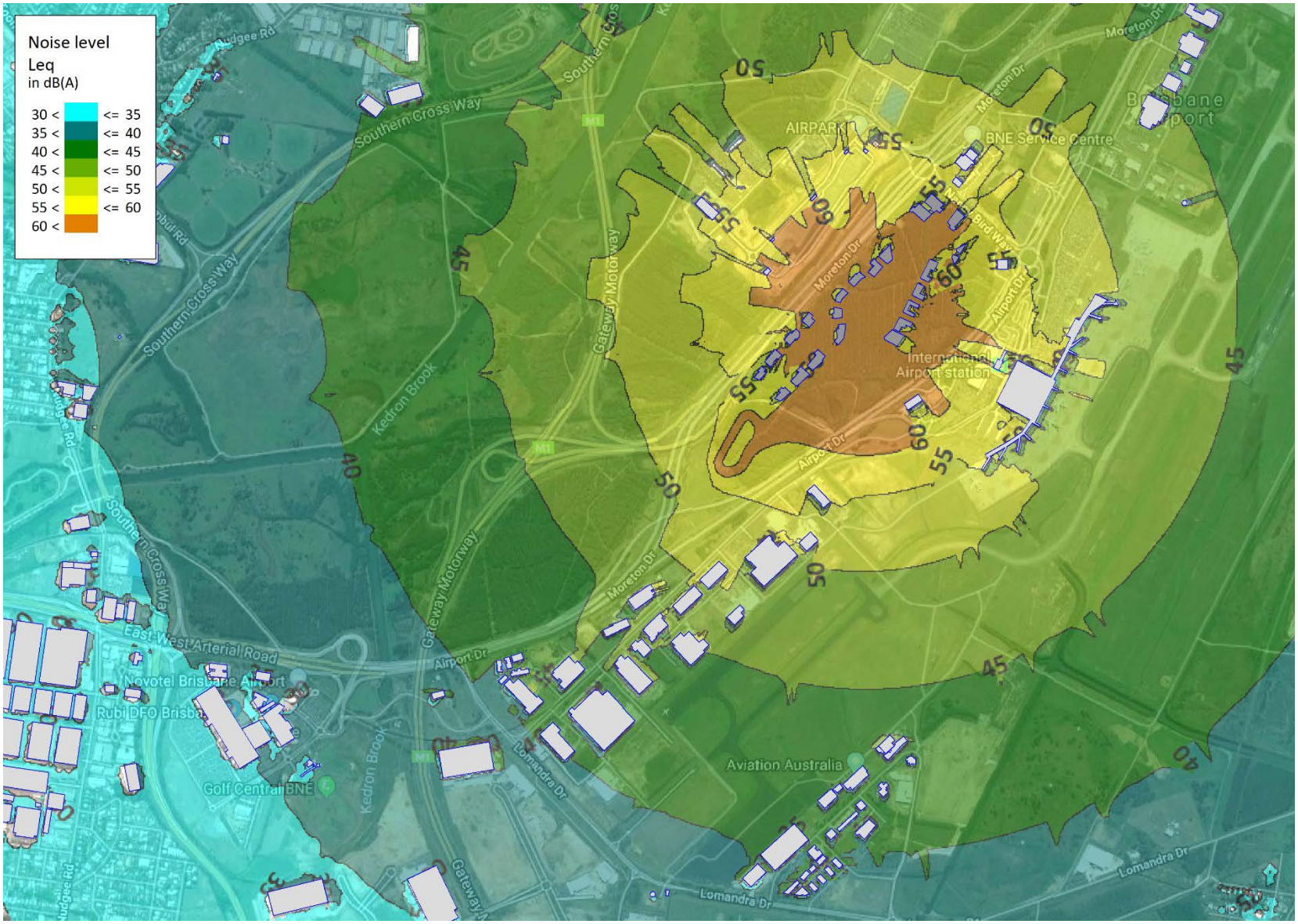


Figure B4 – Operational noise contour of Scenario 4

Figure B5 – Operational noise contour of Scenario 4 (Pinkenba)

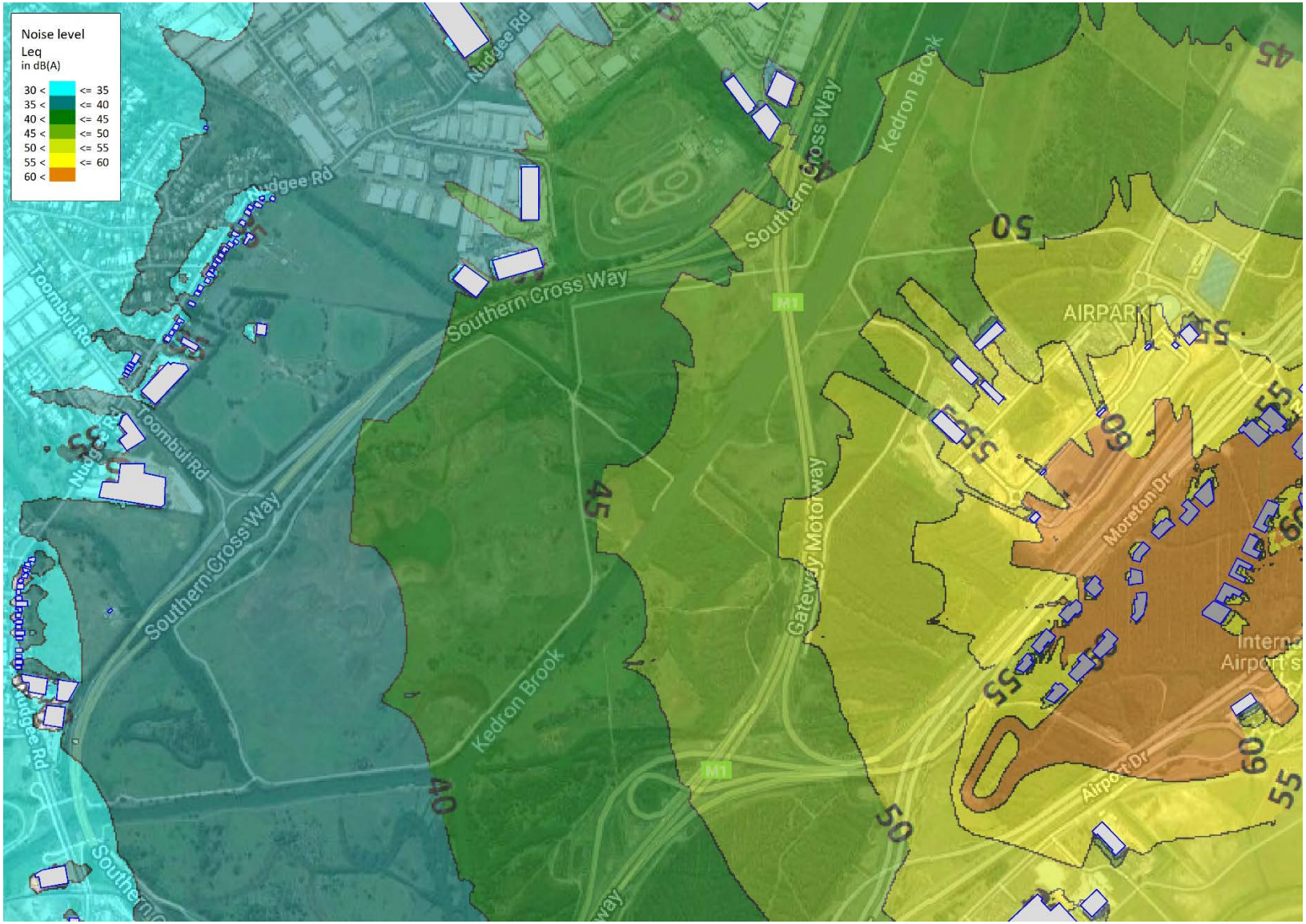


Figure B6 – Operational noise contour of Scenario 4 (Nundah and Northgate)

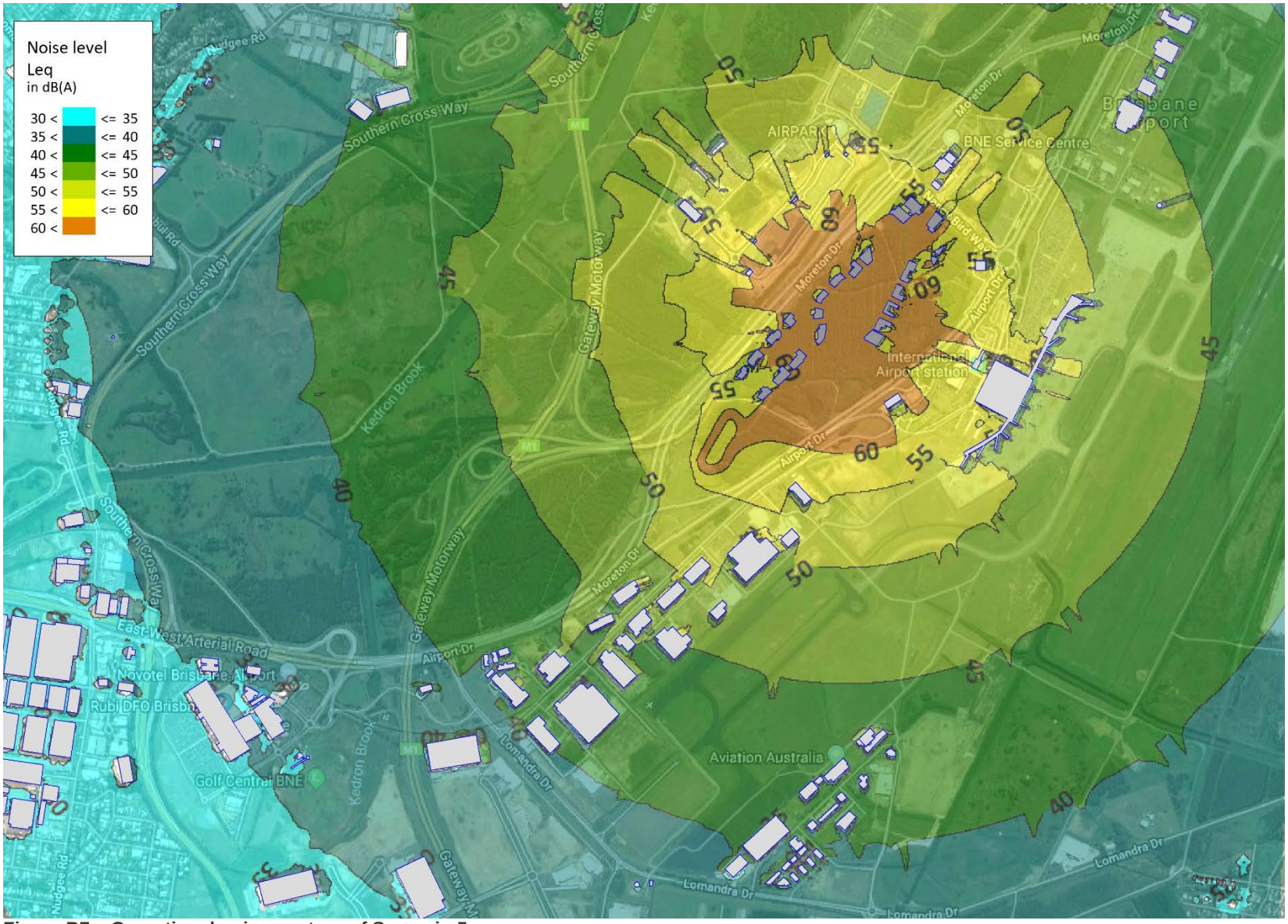


Figure B7 – Operational noise contour of Scenario 5

Figure B8 – Operational noise contour of Scenario 5 (Pinkenba)

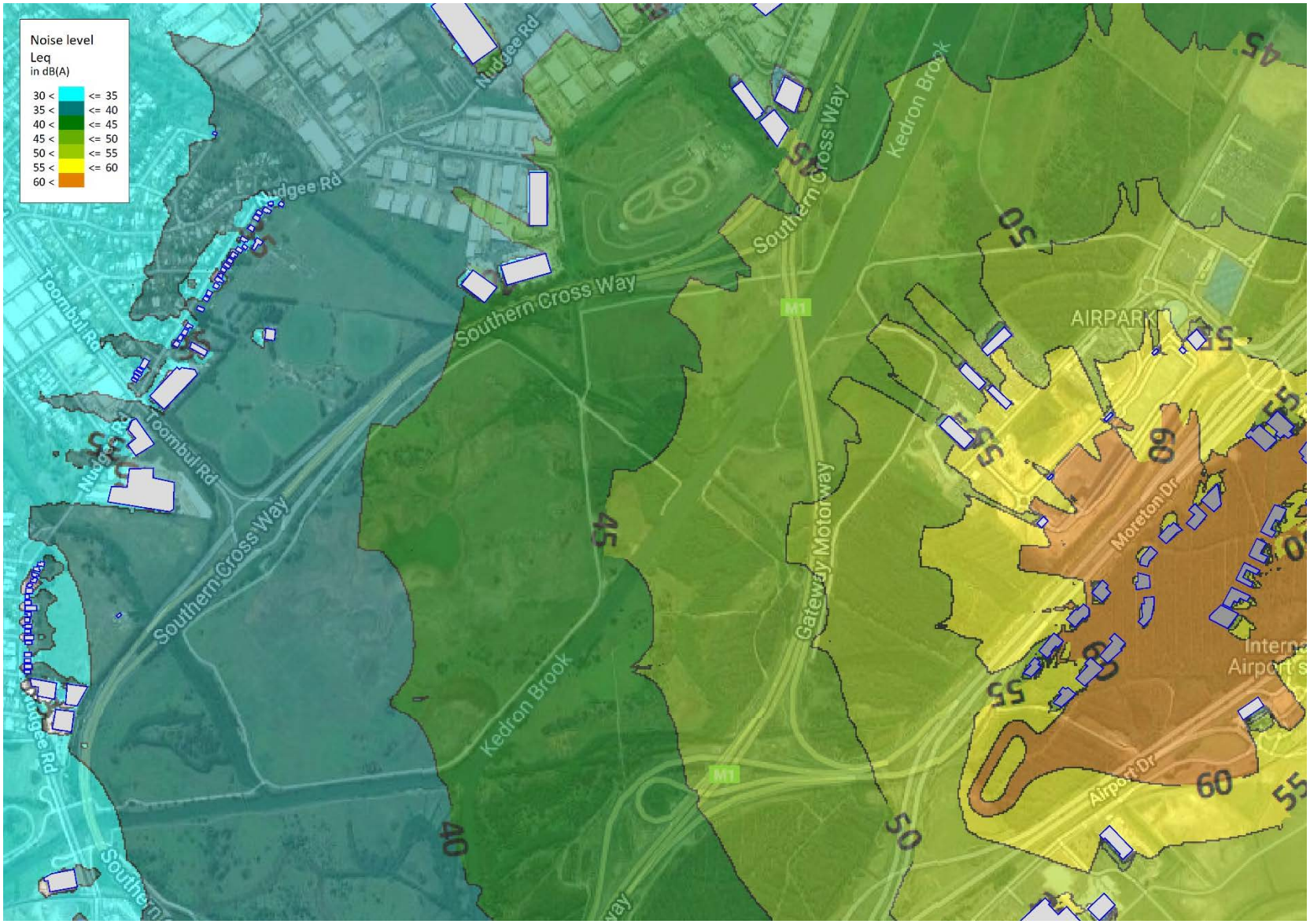


Figure B9 – Operational noise contour of Scenario 5 (Nundah and Northgate)

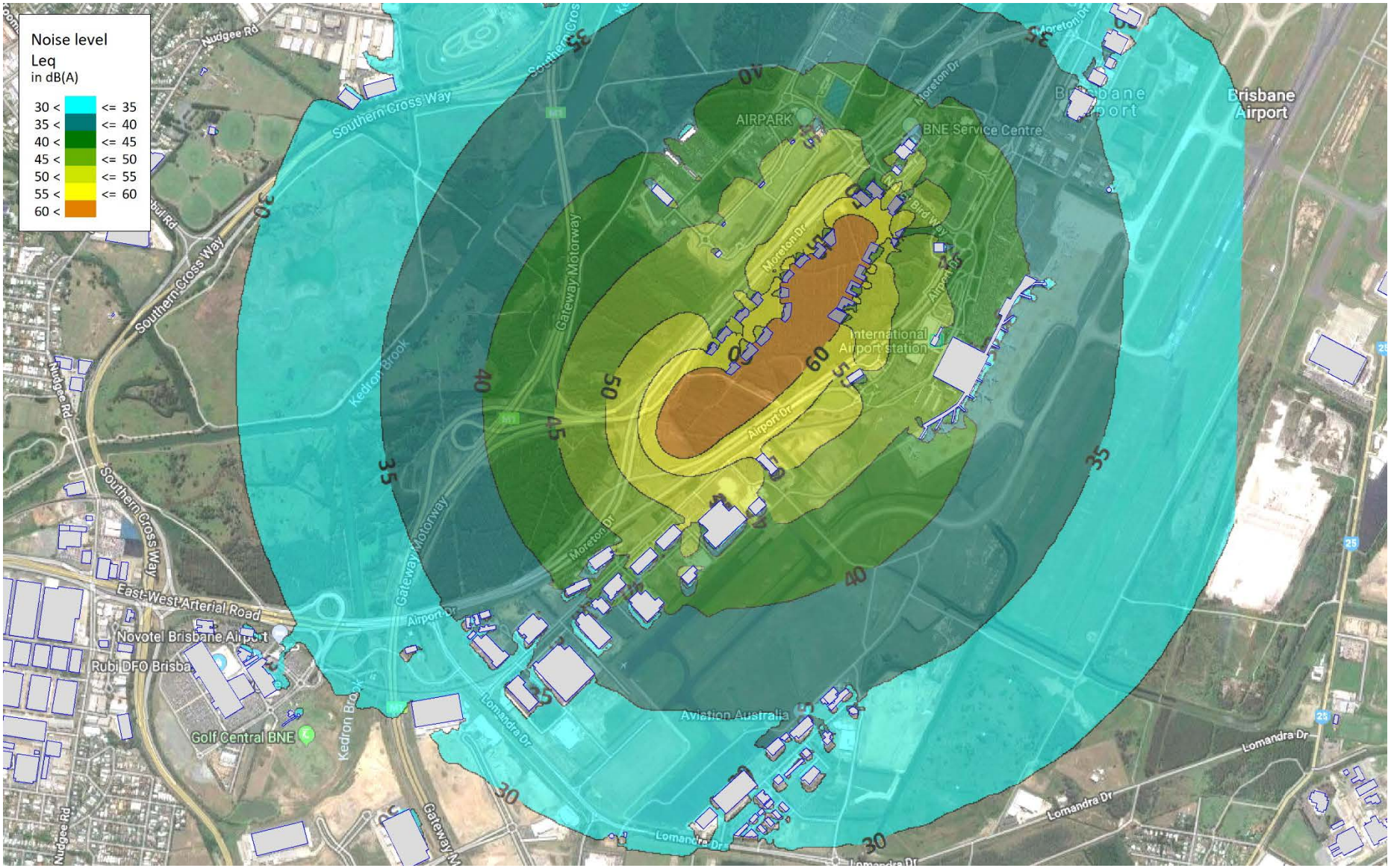


Figure B10 – Operational noise contour of Scenario 6

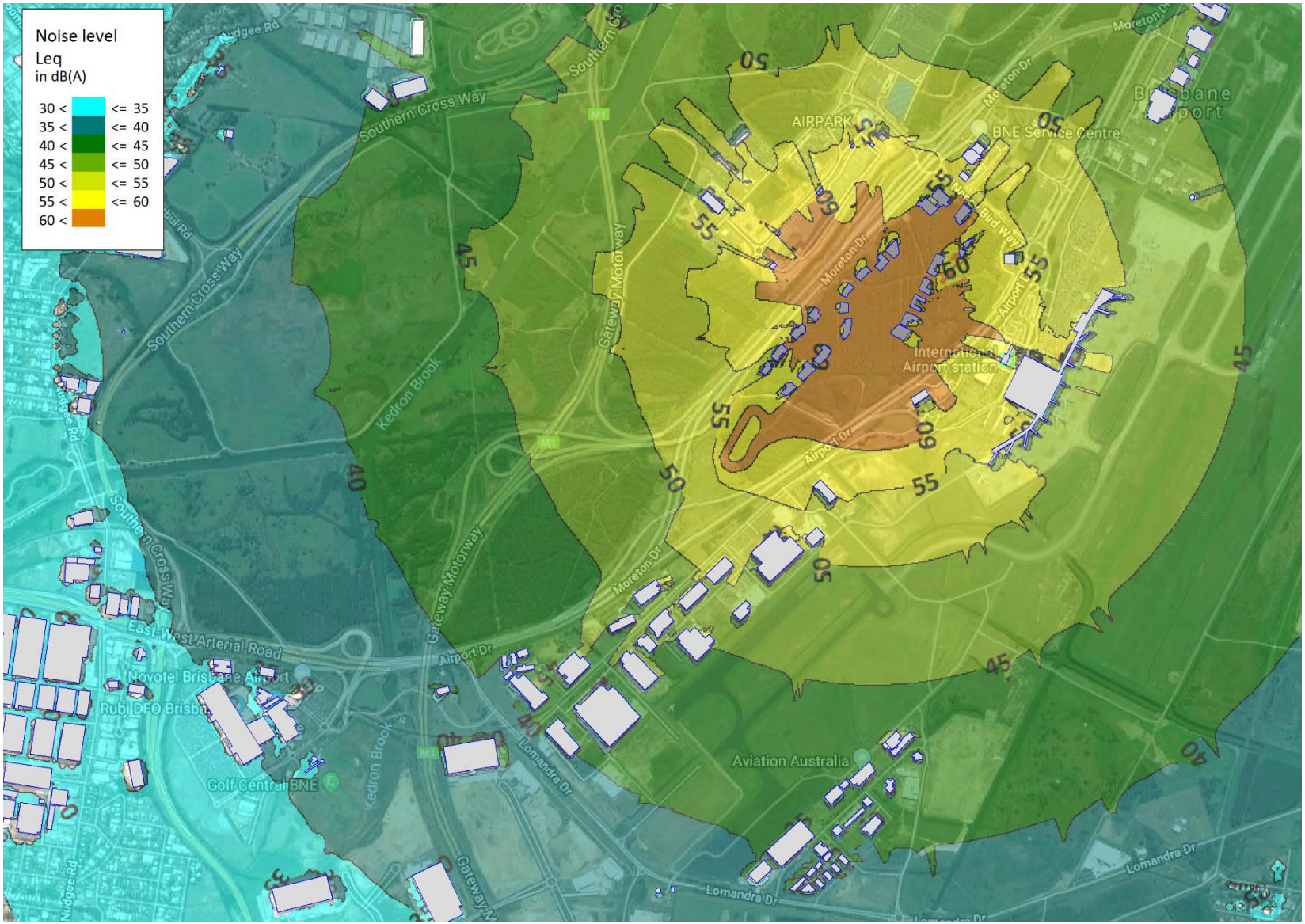


Figure B11 – Operational noise contour of Scenario 7

Figure B12 – Operational noise contour of Scenario 7 (Pinkenba)

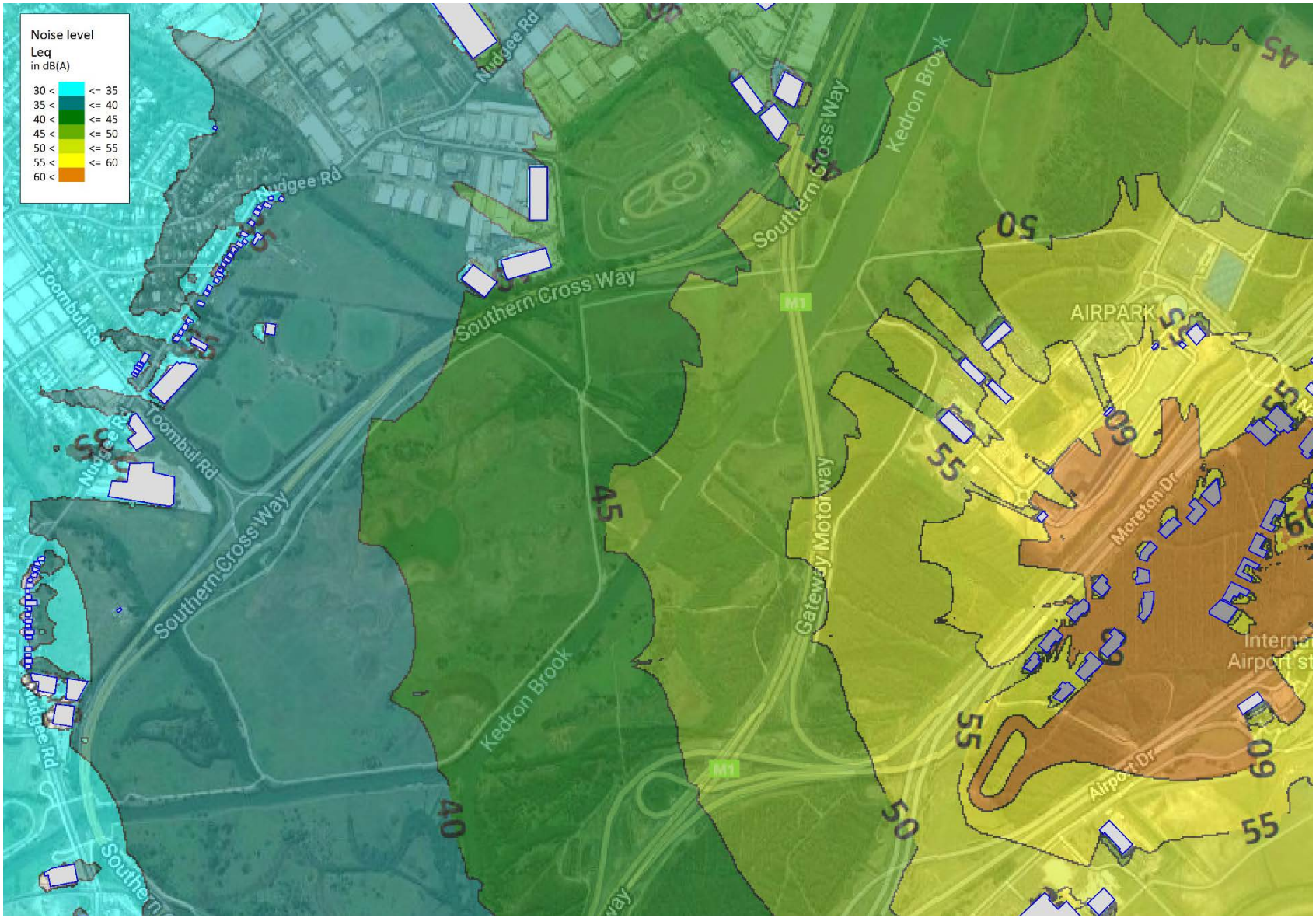


Figure B13 – Operational noise contour of Scenario 7 (Nundah and Northgate)

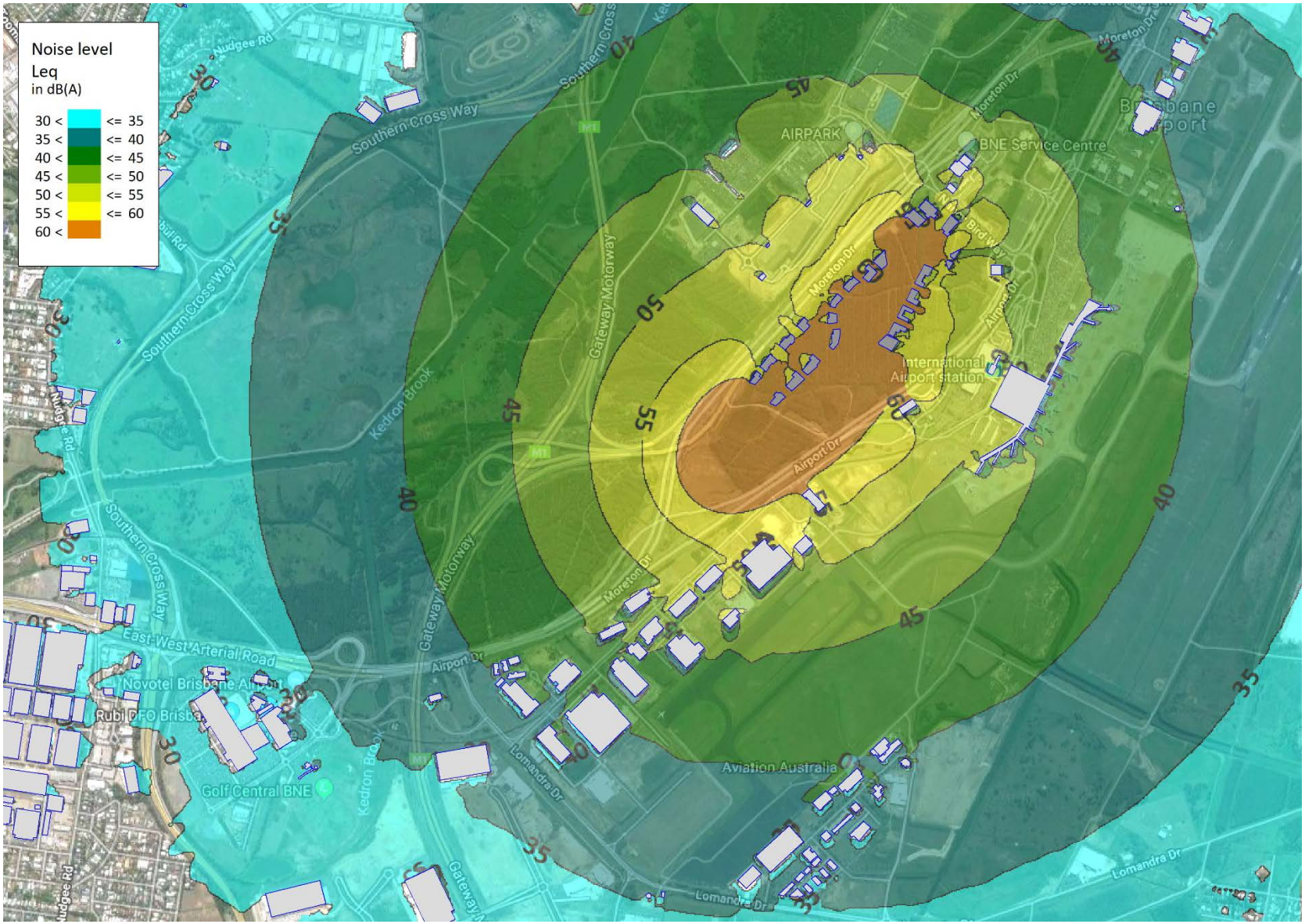


Figure B14 – Operational noise contour of Scenario 8

Figure B15 – Operational noise contour of Scenario 8 (Pinkenba)

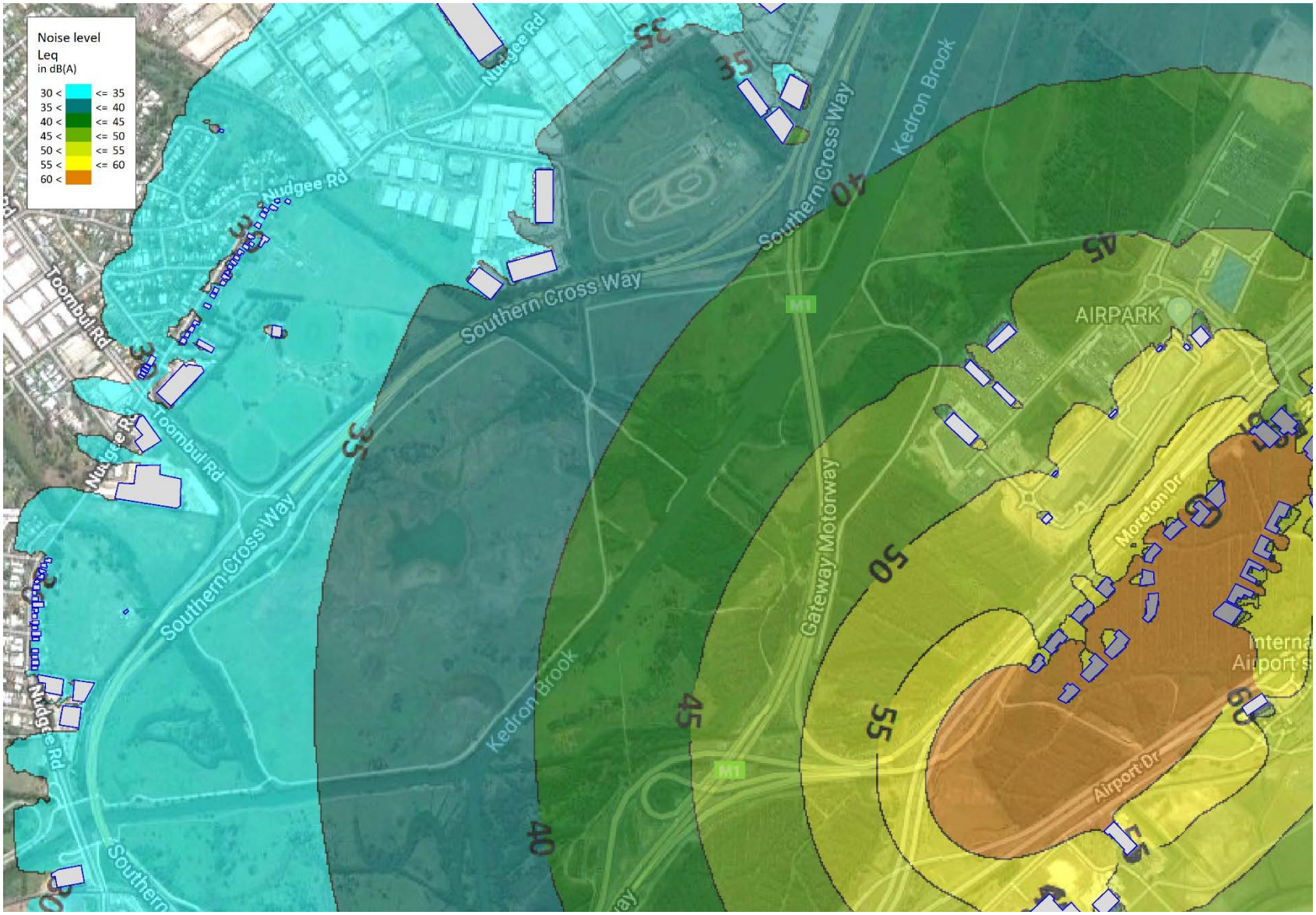


Figure B16 – Operational noise contour of Scenario 8 (Nundah and Northgate)

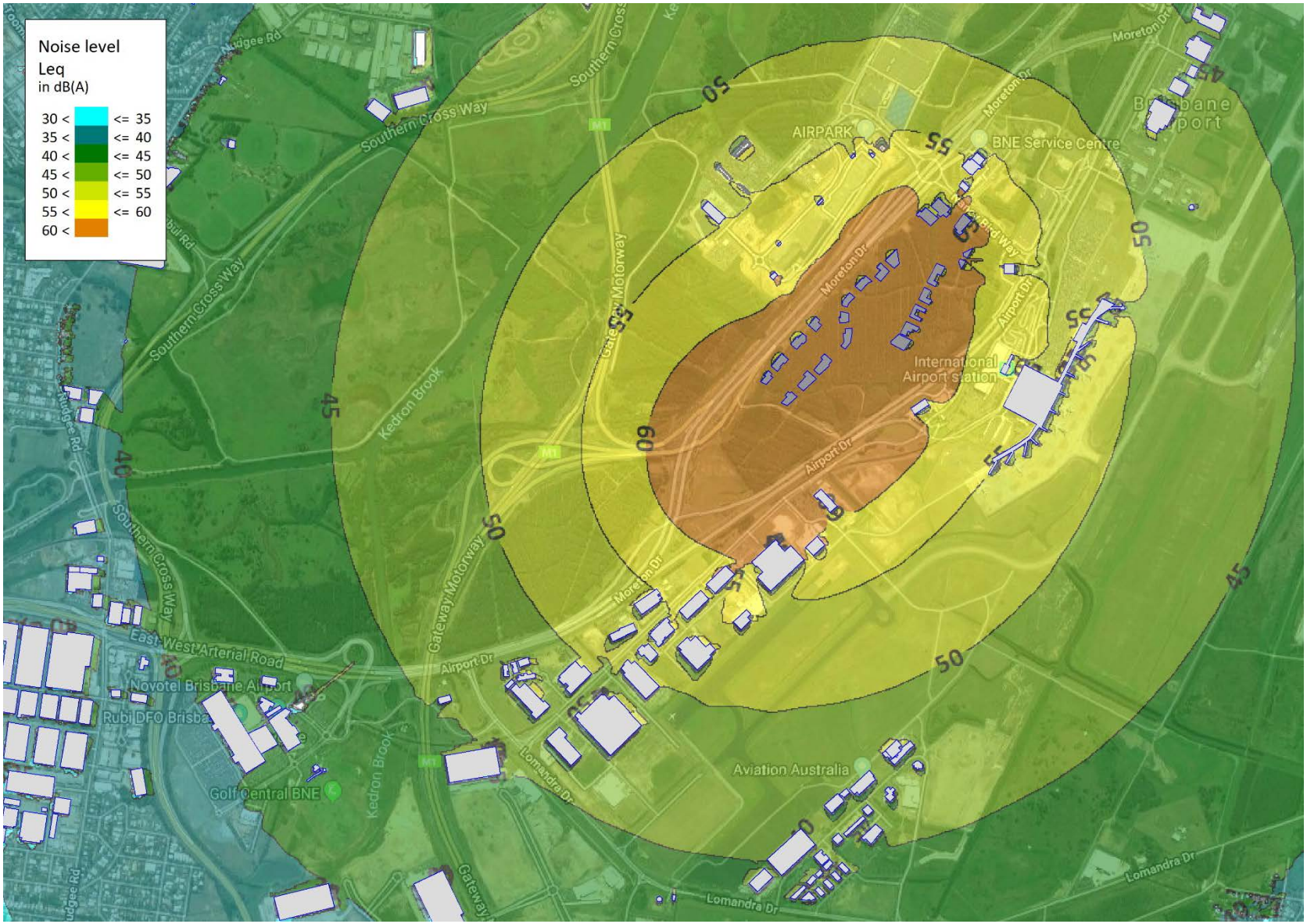


Figure B17 – Operational noise contour of Scenario 9

Figure B18 – Operational noise contour of Scenario 9 (Pinkenba)

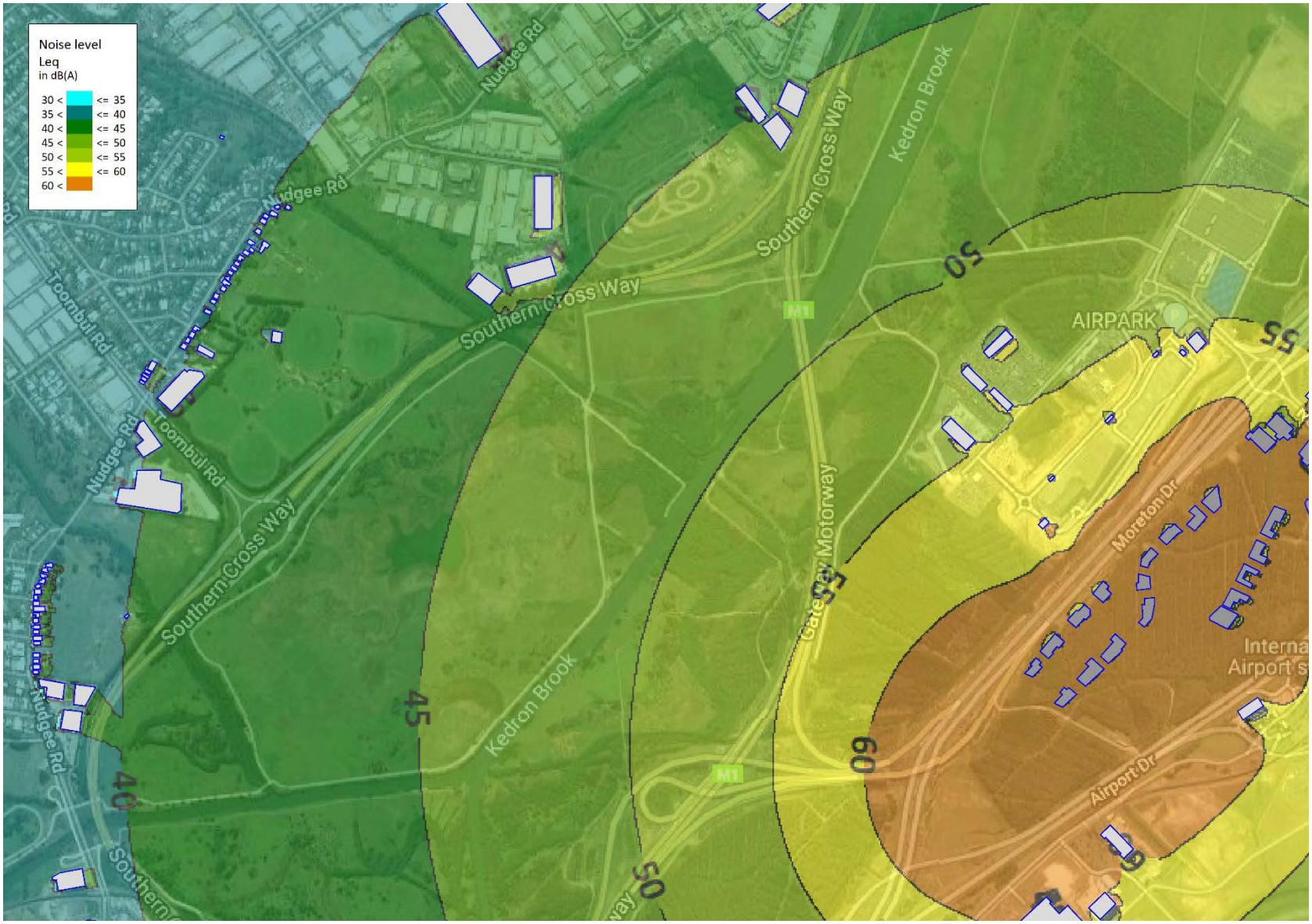


Figure B19 – Operational noise contour of Scenario 9 (Nundah and Northgate)

D

Operational Noise Management Plan

BNE Auto Mall

Operational Noise Management Plan

Brisbane Airport Corporation

Reference: 503043

Revision: 1

2019-03-26

aurecon

Bringing ideas to life

Document control record

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Approval			
Author signature		Approver signature	
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Title	Acoustic Consultant	Title	Principal Environment and Planning

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1 Introduction

1.1 Project overview

The BNE Auto Mall (the Project) is set to be Australia's benchmark automotive precinct designed for new car buyers, motoring enthusiasts and the public. The Project involves a diverse mix of uses such as:

- A performance track which includes a skid pan, kick plate, manoeuvring course, dedicated slalom area, 4WD demo course, low friction handling circuit and associated driver trainer facilities;
- Flagship automotive dealerships;
- Brand experience centres; and
- Track operations and management centre.

The BNE Auto Mall is to operate seven days a week with hours ranging between 9am and 10pm. The performance track is envisaged to host events such as:

- Corporate driving events;
- Shared test drive days;
- Motorbike days;
- Driver experience days;
- Driver training days;
- 4WD training days; and
- Special and major event days.

The dealerships and brand experience centres will be located around the perimeter of the performance track to create a new landmark destination and generate significant economic and social activity for the Brisbane Airport and surrounding area.

1.2 Purpose of document

This Operational Noise Management Plan should be used as an aid in assessing operational noise emissions for the BNE Auto Mall. Specifically, this document includes:

- The applicable noise criteria to the site
- Noise assessment procedures for the following scenarios:
  - Commissioning of the site
  - On-going noise monitoring to show compliance to the relevant noise criteria
  - Change in operations procedure
  - Special and/or major event days

2 Noise criteria

The noise criteria for the Project site was developed for the BNE Auto Mall Acoustic Assessment Report[1].

2.1 Environmental noise criteria

The following environmental noise level criteria has been considered:

- Environmental Protection (Noise) Policy 2008, *Environmental Protection Act 1994* (State)
- Guideline – Application requirements for activities with noise impacts, Version 3.0, 6 March 2017, former Department of Environment and Heritage Protection (State)
- Guideline – Planning for noise control, Version 1.0, former Department of Environment and Heritage Protection (State)
- Noise Impact Assessment Planning Scheme Policy (PSP), *Brisbane City Plan 2014* (Local)

2.1.1 Noise Impact Assessment Planning Scheme Policy

Brisbane City Council (BCC) has a published method of noise impact assessment for a proposed scheme (Brisbane Bity Plan 2014 - Schedule 6, v15.00/2019, in effect as of 31 May 2019). The Noise Impact Assessment PSP describes the application of an *intrusive noise criterion*, based on the Rating Background Level (RBL), which is based on the existing noise environment, and an *acoustic amenity*, which is based on a single number value for each time period for amenity. As the *intrusive noise criteria* is lower than the *acoustic amenity criteria* for residential areas surrounding the project during the day, the site will be assessed against the *intrusive acoustic criteria*, which is as follows:

The criteria applicable to this Project will be $dBL_{Aeq,T}$ = RBL + 3 dB.

For locations which exceed the above criterion, a comparison to the applicable acoustic amenity criteria should be made.

Baseline measurements were conducted previously by Aurecon[1] and PSK Environmental[2]. A summary of measurements and locations of measurements are shown below in Table 1, Table 2 and Figure 1.

Table 1 Summary of measured noise levels by Aurecon (2019)

Logger #	Location	Date/ Period	Average Noise Level $dBL_{Aeq,T}$			Background Noise Level dBL_{A90}		
			Day 0700 - 1800	Eve. 1800 - 2200	Night 2200 - 0700	Day 0700 - 1800	Eve. 1800 - 2200	Night 2200 - 0700
1	94 Lomandra Drive, Brisbane Airport	26/02/19 – 05/03/19	62	60	57	46 Note 1	43 Note 1	43 Note 1
2	Airport conservation area	26/02/19 – 5/3/19	51	50	52	45 Note 1	45 Note 1	41 Note 1
3	Virginia Soccer Club	05/03/19 – 13/03/19	58	52	49	50 Note 1	45 Note 1	41 Note 1

[1] BNE Auto Mall – Acoustics Assessment Report (2019)
[2] PSK Environmental Interim Report (2017)

Table 2 Summary of measured noise levels by PSK Environmental (2017)

Logger #	Location	Date/ Period	Average Noise Level $dBL_{Aeq,T}$			Background Noise Level dBL_{A90}		
4	Kingsford Smith Memorial	05/09/17 – 19/09/17	60	55	58	52	48	50
5	BAC Service Centre	20/09/17 – 05/10/17	61	60	60	56	53	52

Notes:

1. The reported background noise levels are the Rating Background Levels.

Figure 1 Noise monitoring locations

2.1.2 Australian Standard 1055.2 – 1997, Acoustics – Description and measurement of environmental noise

Appendix A of Australian Standard (AS) 1055.2 – 1997 provides estimated background noise levels for different areas containing residences (typically the most sensitive receiver type) in Australia. These are detailed below.

Table 3 Estimated average background sound levels from AS 1055.2 - Appendix A

Noise area category Note1,2	Description of neighbourhood	Average background A-weighted sound pressure level, $L_{A90,T}$					
		Monday to Saturday			Sundays and Public Holidays		
		0700 - 1800	1800 - 2200	2200 - 0700	0900 - 1800	1800 - 2200	2200 - 0900
R1	Areas with negligible transportation	40	35	30	40	35	30
R2	Areas with low density transportation	45	40	35	45	40	35

Noise area category Note1,2	Description of neighbourhood	Average background A-weighted sound pressure level, $L_{A90,T}$					
		Monday to Saturday			Sundays and Public Holidays		
		0700 - 1800	1800 - 2200	2200 - 0700	0900 - 1800	1800 - 2200	2200 - 0900
R3	Areas with medium density transportation or some commerce or industry	50	45	40	50	45	40
R4	Areas with dense transportation or some commerce or industry	55	50	45	55	50	45
R5 Note 3	Areas with very dense transportation or in commercial districts bordering industrial districts	60	55	50	60	55	50
R6 Note 3	Areas with extremely dense transportation or within predominantly industrial districts	65	60	55	65	60	55

Notes:

1) The division into noise area categories is necessary in order to accommodate existing sound levels encountered at residential sites in predominantly commercial or industrial districts, or in areas located close to main land transport routes, i.e. road and rail.

2) The noise area category most appropriate should be selected irrespective of metropolitan or rural zoning and will vary from location to location.

3) Some industrial and commercial sites are not predominant sources of high background sound levels.

This standard has since been superseded (updated as AS1055:2018), with Appendix A and any reference to the table above removed. However, these noise level estimates are considered indicative of the ambient environment of specific areas, in the absence of noise measurements, particularly for less-noise sensitive receiver types (e.g. commercial properties).

Relevance to the Project

For those sensitive and commercial receptors where noise measurements have not been obtained, the following noise area category has been applied, as per Table 3:

- Commercial properties along Qantas Drive – R5
- Novotel – R3
- Hertz car rental – R4
- Airport Prayer Room – R5

2.2 Project specific noise criteria

Based on the environmental noise criteria outlined in Section 2.1 ($dBL_{Aeq,T}$ = RBL + 3 dB), Table 4 presents the following noise criteria would be considered acceptable for the Project site and the surrounding premises:

Table 4 Proposed noise level criteria for the Project

Noise-sensitive receptor	Criteria, Monday to Saturday dB $L_{Aeq,T}$			Comments
	Daytime 0700 - 1800	Evening 1800 - 2200	Night-time 2200 - 0700	
94 Serpentine Road, Pinkenba	49	46	46	

Noise-sensitive receptor	Criteria, Monday to Saturday dB $L_{Aeq,T}$			Comments
	Daytime 0700 - 1800	Evening 1800 - 2200	Night-time 2200 - 0700	
633 Nudgee Road, Nundah	53	48	44	Based on measurements included in Table 1
789 Nudgee Road, Northgate	53	48	44	
Australian Catholic University	39	36	33	
Kingsford Smith Memorial	55	53	55	
BAC Service Centre/McDonalds	59	58	57	
Prayer Room (Central parking area)	59	58	57	Based on BAC Service Centre measurements provided by PSK Environmental.
Nearest existing commercial property (Qantas Drive buildings) – (R5)	63	58	53	Based on estimated background levels in AS1055.2.
Nearest existing hotel – Novotel (floor 3) – (R3)	53	48	43	
Hertz car rental – (R4)	58	53	48	
Prayer Room (Airport) – (R5)	63	58	53	

3 Acoustic modelling

Preliminary noise modelling was conducted for the BNE Auto Mall to provide a general understanding of the expected noise impacts, sources and extent of mitigation required. Results of this assessment and further details about the modelling procedure is provided in the Acoustics Assessment Report.

The nine 'typical' operational scenarios that were considered for the BNE Auto Mall included:

- **Scenario One:** High performance vehicles using the performance track, with six laps within a one hour period (operating hours from 9 am to 10 pm).
- **Scenario Two**: Normal test driving situations (using normal road cars) assuming a maximum of 12 laps within a one hour period. This Scenario aligns with the potential operational activities for *driver training days* (operating hours from 9 am to 6 pm)
- **Scenario Three:** Scenario One with the addition of six stationary (idling) vehicles at pit-stop locations. This Scenario aligns with the potential operational activities for *driver experience days* (operating hours from 9 am to 10 pm).
- **Scenario Four:** Scenario One with the addition of two vehicles using the skid pan (operating hours from 9 am to 10 pm).
- **Scenario Five:** Scenario Three with the addition of two vehicles using the skid pan (operating from 9 am to 6 pm).
- **Scenario Six:** High performance vehicles using the performance track, with twelve vehicle laps of the track within a one hour period (operating from 9 am to 10 pm).
- **Scenario Seven:** Scenario Four with the addition of six vehicles per hour using the 4WD test circuit, and six motorbikes per hour using the performance track. This Scenario aligns with the potential operational activities that are anticipated for *shared test drive days, 4WD training days* and *motorbike days* (operating from 9 am to 10 pm). It is noted these activities may occur in isolation of other activities, however, the simultaneous use of high performance vehicles, the skid pan, 4WD test circuit and motorbikes has been assessed to represent the worst-case scenario.
- **Scenario Eight:** Six high performance vehicles on the performance track, completing six laps simultaneously in any one hour period. This Scenarios aligns with the potential operational activities that are anticipated for *corporate driving days* (operating from 9 am to 6 pm).
- **Scenario Nine:** Six high performance vehicles using the performance track, completing 12 laps in any one hour period. Also includes up to 5,000 spectators, cars idling in the pit stop locations and operation of a PA system (operating from 9 am to 10 pm) - this scenario has assessed a worst-case scenario with 5,000 spectators.

It is recommended that these scenarios are reviewed by the operators on site following detailed design and once operational activities for the BNE Auto Mall are confirmed.

4 Noise Management

4.1 Commissioning noise monitoring procedure

It is proposed that a commissioning noise strategy is developed to verify the preliminary noise modelling and Acoustics Assessment Report for the BNE Auto Mall. The verification method would involve the following tasks:

- Note any noise mitigation strategies used to date.
- Undertake source noise level measurements of all typical motor vehicle (normal road cars, motorbikes, high performance vehicles, etc.) pass-by on the side of the performance track, in a designated safe area.
- Undertake source noise level measurements of other site-relevant noise sources (e.g. testing rigs/stands, powered equipment, Public Announcement Service), as required.
- Confirm the total number of vehicles used within a defined time period.
- Undertake attended noise monitoring at a minimum of three locations around the performance track, preferably between 200 m – 500 m of the Project site.
- Record weather details at time of measurements, including temperature, wind speed and direction and precipitation amount.
- Remove extraneous noise events from the attended noise measurements (such as aircraft approach/take-off) and inclement weather periods (such as when local wind speeds are > 5 m/s, and rain affects the noise levels).
- Determine source noise levels of noise sources and apply appropriate time-weightings.
- Predict noise levels with respect to attended noise monitoring locations (minimum three), accounting for measured weather statistics.
- Apply a calibration factor to the source noise levels if predicted noise levels differ from the measured noise levels by greater than 1 dB.
- Predict noise levels using a calibrated model with site-specific general weather conditions at noise sensitive locations, for typical and maximum noise scenarios. These scenarios must be clearly defined. Compare the predicted noise levels with the Project noise criteria.
- Investigate noise mitigation measures if exceedances are predicted. Report achievable mitigation measures, including physical mitigation and management controls/operational restrictions.
- Produce noise contour maps of the Project site, preferably in 3 dB increments from 100 m outwards of the site to approximate noise sensitive locations. Sufficient detail needs to be provided as ongoing monitoring will be based on these operational noise contour models.
- Prepare a technical memorandum summarising the results of this verification method, including the new noise contour maps.

The following commissioning procedure is to be conducted by a suitably qualified acoustic consultant.

All noise measurements shall be conducted with a NATA-certified calibrated Type 1 sound level meter, using a “fast” weighting and 1/1 octave band frequency analysis. Measurements should be conducted with the following information documented:

- Pre and post calibration status of the sound level meter.
- Measurement period.
- Notes on attended noise monitoring, including record of extraneous noise events.
- A minimum of 1/1 octave band L_{Amax} and $L_{Aeq,1s}$ parameters recorded for source noise level measurements (1/3 octave band measurements can also be used to check for tonality).
- A minimum of broadband L_{Amax} and $L_{Aeq,1s}$ parameters recorded for attended noise monitoring measurements.

Unattended noise monitoring is not suitable to determine the noise impacts from the Project at surrounding noise sensitive receptors. This is due to the high likelihood of non-Project noise sources (aircraft and road traffic noise) impacting the noise measurement, which are governed by different legislation. Any non-processed measured data would be considered not representative of the BNE Auto Mall noise emissions.

4.2 Post-commissioning noise monitoring procedure

Post-commissioning noise monitoring is also recommended, to ensure ongoing compliance of the BNE Auto Mall. Attended noise monitoring should be conducted in locations within 200 – 500 m of the Project site, to replicate predicted noise levels in the commissioning phase, and should occur for the following scenarios;

- When a noise complaint is made; or
- If no noise complaints occur within a year, conduct annually.

A register of noise complaints should be recorded, including the time and nature of the alleged incident to aid in complaint verification.

4.2.1 Standard noise monitoring

The following procedure should be undertaken when completing a standard noise monitoring assessment;

- Appoint a qualified acoustic consultant.
- Confirm the total number of vehicles and/or motorbikes used within a defined time period.
- Undertake attended noise monitoring at a minimum of three locations, representative of noise sensitive receptors to the Project site, preferably between 200 m – 500 m of the site.
- Record weather details at time of measurements, including temperature, wind speed and direction and precipitation amount.
- Remove extraneous noise events from the attended noise measurements (such as aircraft approach/take-off) and inclement weather periods (such as when local wind speeds are > 5 m/s, and rain affects the noise levels).
- Compare attended measured noise levels to appropriate predicted noise level contours of operational scenarios developed during commissioning phase. Measured noise levels should be within the predicted noise levels contour band (i.e. 30 – 33 $dBL_{Aeq,T}$).
- Provide justification for the selected operational scenario.
- Prepare a technical memorandum with evidence of mutual agreeance in predicted and measured noise levels.
- Peer review technical memorandum with another qualified acoustic consultant.

All technical memorandums should be filed appropriately as evidence of ongoing compliance.

4.2.2 Change in operations procedure

The commissioning noise monitoring procedure (Section 4.1) must be repeated with the new technical memorandum superseding the existing technical memorandum, if the following occurs;

- Operational changes to the BNE Auto Mall (such as change of vehicle fleet, performance track changes, increase in vehicle numbers etc.)
- Major earthworks have occurred between the Project site and noise sensitive locations (including removal of vegetation).
- Construction of new development between the Project site and noise sensitive receptors.
- Any events (including special and/or major events) not previously modelled (to be included as a scenario in the commissioning technical memorandum).

All noise measurements shall be conducted with a Type 1 sound level meter, with “fast” weighting and overall noise level in dB(A). Measurements should be conducted using $L_{Aeq,1s}$ increments, so appropriate data can be processed.

4.2.3 Special and/or major events procedure

If special and/or major events (e.g. car shows etc.) are planned, consultation with the local authority is recommended, to confirm minimum requirements and relevant permits, licences and/or approvals that may be required. In addition to complying with the local authority requirements, the following must also be considered:

- Notify nearby residents of possible noise increases (via letter drop or communications team).
- Limit noisy operational activities (such as the use of the skid pan) to occur during daytime periods (typically between 7 am to 6 pm), where possible so that the less intrusive operational activities are to occur during evening periods.
- Special and/or major events will be limited to occur bi-annually (maximum two times per year).
- Install of temporary noise barriers for the event. The location, extent and height of barriers should be considered.
- Undertake noise monitoring near residential areas during the event, with documentation to include:
  - Approval of event from local authority.
  - Operational noise sources associated with the special event.
  - Noise mitigation strategies adopted for the event (if applicable).
  - Detail of measurement location and topography.
  - Meteorological data at time of measurements.
  - Measured noise levels, detailed commentary on high noise events (including extraneous noise events), time and duration of measurement and source noise type noted at the measurement location.
  - Assessment against relevant noise criteria. Detailed discussion outlining the results of this assessment.
  - Plots of measured noise levels (L_{Amax}, L_{A10}, L_{A90} and $L_{Aeq,T}$), highlighting high noise events. Appropriate time increments showing change in noise levels.
  - Suitable ameliorative measures and management controls in case of non-compliance.

All noise measurements shall be conducted with a NATA-certified calibrated Type 1 sound level meter, using a “fast” weighting and 1/1 octave band frequency analysis. Measurements should be conducted with the following documented:

- Pre and post calibration status of the sound level meter.
- Measurement period.
- Notes on attended noise monitoring, including record of extraneous noise events.
- A minimum of broadband L_{Amax} and $L_{Aeq,1s}$ parameters recorded for attended noise monitoring measurements.

5 Conclusion

An Operational Noise Management Plan has been created for discussion purposes for the BNE Auto Mall. Further discussion is to be undertaken to confirm the preferred process in carrying out the above noise management strategies.

The Operational Noise Management Plan covers the following scenarios:

- Compliance commissioning noise monitoring procedure.
- Standard noise monitoring procedure (post commissioning).
- Change in operations procedure.
- Special events procedure.

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E

Mitigation measures

Appendix E

Mitigation measures for noise and vibration

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Operational Noise				
Operation of the performance track and other vehicular activities	Advise receptors of the potential noise impacts that may occur during operation	▪ An Operational Noise Management Plan has been developed for the BNE Auto Mall day-to-day operations and event days. The Operational Noise Management Plan should be reviewed and updated following detailed design and once further details of the operational activities has been confirmed. ▪ Where practicable, the number of laps and the simultaneous use of high performance vehicles on the performance track should be limited, particularly outside of daytime hours. ▪ Notify nearby sensitive receptors in advance of event days. ▪ Undertake stakeholder engagement with affected commercial precincts (Australian Catholic University, BAC Service Centre, Qantas Drive businesses) to understand their evening operations and confirm the 'true affected businesses' that may be impacted by the operation of the BNE Auto Mall during the evening. Once confirmed, further mitigation strategies may be required. ▪ Where practicable, avoid the unnecessary revving of vehicle engines and switch of mechanical plant.	Operation	To be updated throughout detailed design and operation phase
Use of the performance track PA system (for emergency only)		▪ The design and commissioning of the PA system should be considered as part of the Noise Management Plan for the facility ▪ The detailed design of the PA system would need to consider the location and directionality / spill of the speakers, and noise limiters, as appropriate ▪ Specification of the PA system is subject to detailed design ▪ Announcements, sirens and alarms, particularly those during the evening, should be limited in use and volume where practicable	Prior to and during construction	To be addressed during detailed design phase and construction

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Internal noise levels at nearby receptors		▪ Ensure perimeter bunds and acoustic screening are constructed to the required height without gaps or inconsistencies. Specific location of physical mitigation will be developed in future design stages. In principle, partial screening of a noise source can provide 5dBA attenuation, within the region of 10dBA provided by full screening. ▪ Where possible, commercial building layouts on the Project site should be designed to screen workshops and other mechanical activities from sensitive receptors, both on and off the Project site. ▪ The internal noise levels in the prayer rooms is likely to meet the internal noise level criteria of AS 2107, assuming closed windows and suitable existing building construction	Prior to and during construction	To be addressed during detailed design phase and construction
Potential community complaints regarding noise during operation of the performance track		▪ Keep a register of noise related complaints and record the time and nature of the alleged incident to aid in complaint verification. ▪ Investigate the source of substantiated noise complaints. ▪ Within seven days of the noise complaint, report the results of the investigation and the actions taken to 'close out' the complaint to the complainant and BAC Environmental Advisor. ▪ Where noise complaints persist, undertake noise monitoring 1 m from the façade of affected properties to assess noise levels against BCC's Noise Impact Assessment PSP criteria and to assist with future management of noise complaints. Outside the hours of 7am to 7pm Monday to Saturday (excluding public holidays), if noise at sensitive receptors off Airport land continues to exceed the BCC criteria, the noise generating activity on the Project site will cease operations.		

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Construction Noise				
	Implement a range of techniques to minimise noise impacts as a result of site construction	▪ If required, (e.g. a validated complaint is received, or an exceedance of the limits set are confirmed (refer Section 2.3.1)), an investigation will be undertaken to determine the source of the exceedance/complaint. ▪ Where possible and practicable, noise machinery should have appropriate mufflers, silencers and/or enclosures fitted to reduce noise transmission. ▪ Avoid noisy plant/machines working simultaneously close together and adjacent to sensitive receivers. ▪ Ensure all equipment is limited to an instantaneous sound pressure level at 15 m of L_{max} 85 dBA (under worst case operating mode), either by fitting silencers/shrouds to existing equipment or by using updated equipment. ▪ Where possible, locate and operate any constant noise sources (i.e. generators) as far as possible from adjacent or nearby premises and the Kingsford Smith Memorial. ▪ Excessively noisy machinery should preferably not operate during sensitive night time hours (i.e. between 10 pm and 7 am) and should be located as far as possible from the noise-sensitive premises. Wherever possible, restrict usage to daytime hours. ▪ Equipment used during Project works are to be operated and maintained in a proper and efficient manner to minimise noise levels. ▪ Equipment/machinery should be shut down when not in use.		
Potential community complaints regarding construction noise	Manage and monitor noise at sensitive receptors who experience noise related impacts during the construction phase	▪ Keep a register of noise related complaints and record the time and nature of the alleged incident to aid in complaint verification. ▪ Investigate the source of substantiated noise complaints. ▪ Within seven days of the noise complaint, report the results of the investigation and the actions taken to 'close out' the complaint to the complainant and BAC Environmental Advisor. ▪ Where noise complaints persist, undertake noise monitoring 1.0 m from the façade of affected properties to assess noise levels against the AEPR noise criteria and to assist with future management of noise complaints. Outside the hours of 7am to 7pm Monday to Saturday (excluding public holidays), if noise at sensitive receptors off Airport land continues to exceed the AEPR noise criteria, the noise generating activity on the Project site will cease operations.	Construction	Requirement to be included in the EMP

Potential environmental aspect/impact	Management objective	Action	Phase to be implemented	Outcome
Vibration				
Vibration from the construction phase leading to cosmetic damage to commercial buildings and sensitive receptors	Minimise the likelihood of damage to commercial buildings and sensitive receptors as a result of vibration from construction activities	▪ Condition assessments of existing buildings within close proximity to the Project site, including the Kingsford Smith Memorial, will be undertaken prior to and during construction. ▪ Investigate the potential of using static rollers instead of vibratory rollers. ▪ Preliminary on-site vibration monitoring at set distances should be conducted for representative works on the site away from vibration sensitive locations. These measurements should then be used to determine potential vibration impacts on nearby vibration sensitive receivers, such as Kingsford Smith Memorial. ▪ Advise stakeholders of upcoming works via regular stakeholder communications. Stakeholders will have the opportunity to discuss with BAC if there are any concerns. ▪ As far as practical, all operations causing relatively high levels of vibration should be carried out at a time to cause the least annoyance to neighbours (e.g. daytime hours). ▪ Where possible, locate and operate any constant vibration sources (e.g. generators), as far as possible from adjacent or nearby premises.	Prior to construction, and during construction	Requirements to be included in the EMP

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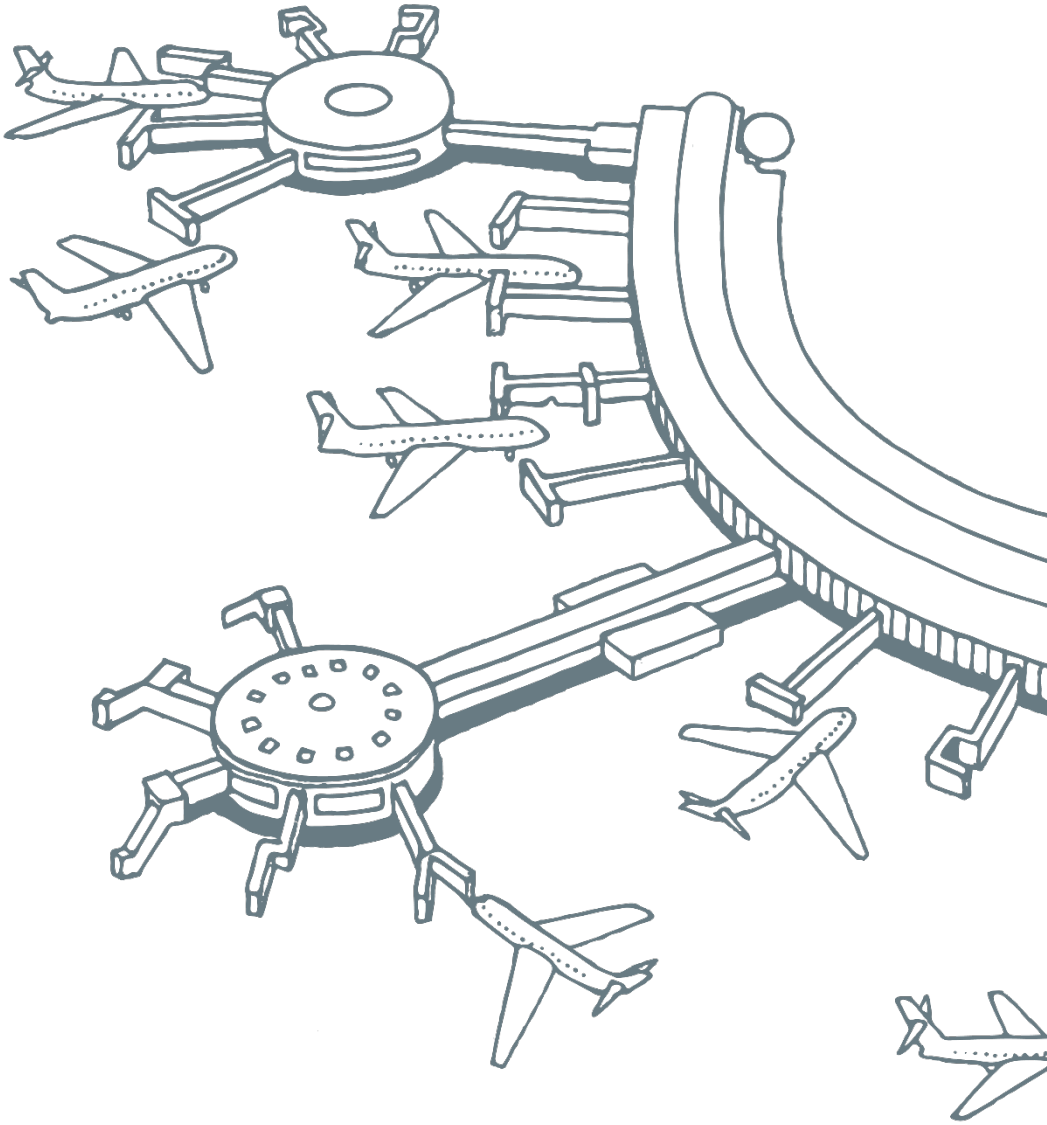
APPENDIX J
FEBRUARY 2020 MONITORING



BAC commenced a PFAS Ambient Monitoring Program in February 2020 in Airport drains and receiving environments. In Landers Pocket Drain, samples were collected from locations upstream of the Airport, alongside the Auto Mall (across Moreton Drive from the Project site), and alongside the Airpark with concentrations ranging from 0.0009 µg/L to 0.02 µg/L for sum of PFOS and PFHxS.

In Kedron Brook Drain, which will be the receiving environment for these Airport drains, concentrations ranged from 0.008 µg/L to 0.024 µg/L for sum of PFOS and PFHxS. These results are below screening criteria for human health and the environment (for 95% species protection), but above the ecological screening criteria for 99% species protection).