



REPORT

GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATION REPORT

Liverpool Civic Place

Submitted to:

Built Pty Ltd

Level 7/343 George Street,
Sydney, NSW 2000

Submitted by:

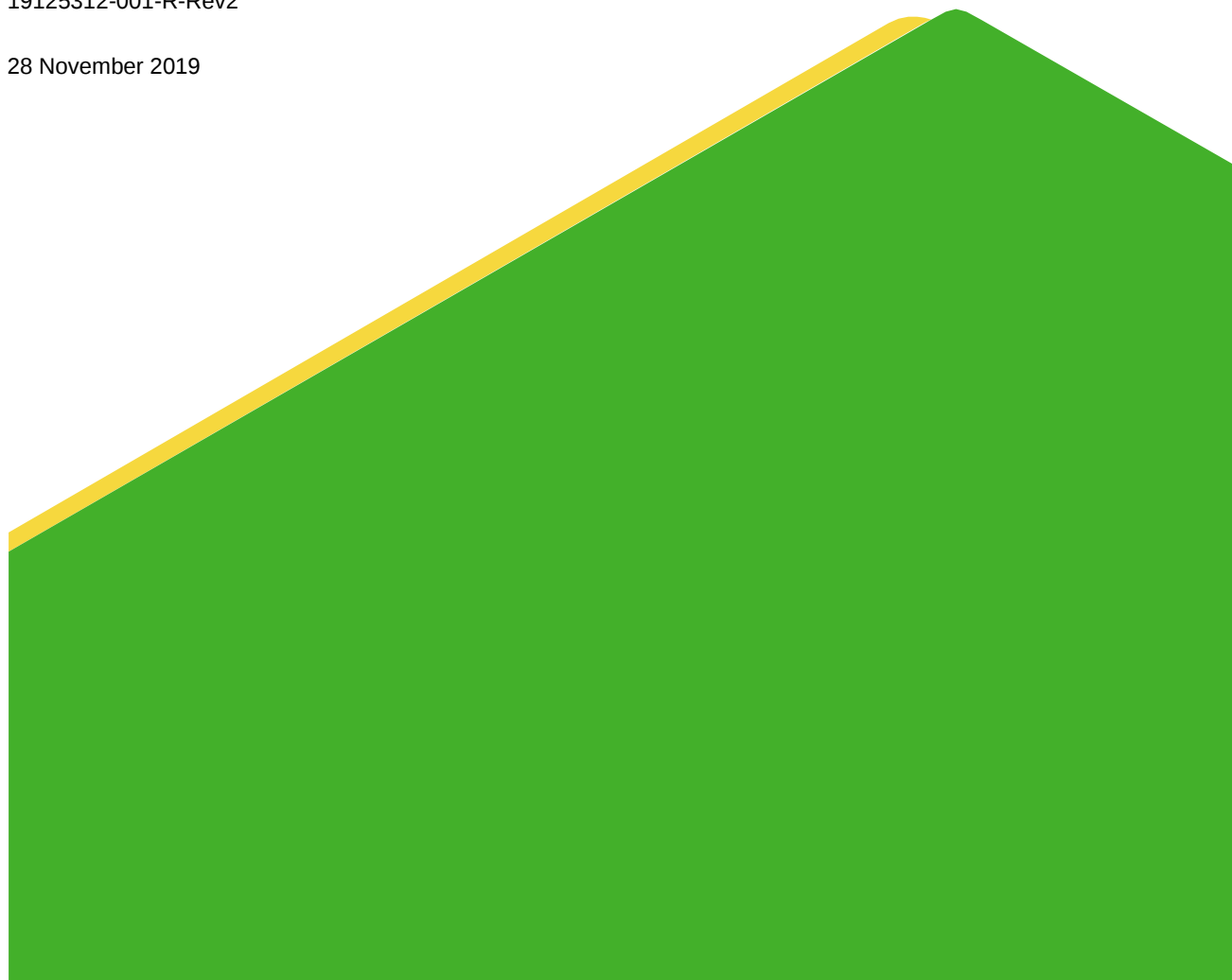
Golder Associates Pty Ltd

Level 8, 40 Mount Street, North Sydney, New South Wales 2060, Australia

+61 2 9478 3900

19125312-001-R-Rev2

28 November 2019



Distribution List

Built Pty Ltd - 1 copy (electronic)

Table of Contents

1.0 INTRODUCTION	1
2.0 SITE ANALYSIS	2
2.1 Site Location and Context	2
2.2 Site Description	3
2.2.1 Access and Connectivity	5
2.2.2 Heritage	5
2.3 Surrounding Development	6
3.0 SCOPE OF THIS REPORT	9
3.1 Project Understanding	9
3.2 Objective and Outcome	10
4.0 BACKGROUND INFORMATION	11
5.0 REGIONAL GEOLOGY	12
6.0 SCOPE OF WORK AND METHODOLOGY	14
6.1 Borehole Investigation	14
6.2 Installation of Groundwater Monitoring Wells	15
6.3 Groundwater sampling	16
6.4 Permeability Tests	16
6.5 Laboratory Testing	17
6.5.1 Geotechnical Testing	17
6.5.2 Soil Quality Testing	17
6.5.3 Groundwater Quality Testing	17
7.0 RESULTS OF INVESTIGATION	19
7.1 Subsurface Investigation	19
7.2 Groundwater	19
7.2.1 Groundwater Level	19
7.2.2 Permeability	21
7.3 Results of Laboratory Testing	22
7.3.1 Unconfined Compression Test	22
7.3.2 Soil Assessment Criteria	22

7.3.3	Soil Analytical Results.....	22
7.3.4	Groundwater Assessment Criteria.....	23
7.3.5	Groundwater Analytical Results.....	23
8.0	GROUND MODEL.....	26
9.0	DISCUSSION AND RECOMMENDATION.....	28
9.1	Geotechnical Design Parameter	28
9.2	Hydrogeological Assessment.....	29
9.2.1	Groundwater Inflow	29
9.2.2	Groundwater Quality	30
9.3	Recommended Retention System	30
9.4	In-Situ Stress.....	31
9.5	Excavatability	32
9.6	Impact on Surrounding Structures and Infrastructure	33
9.6.1	Ground Movement	33
9.6.2	Groundwater Level Drawdown.....	33
9.6.3	Vibration	33
9.7	Monitoring Regime	34
9.8	Foundation Options.....	34
9.9	Indicative Waste Classification.....	34
9.10	Additional Investigation	36
10.0	LIMITATIONS.....	37

TABLES

Table 1:	Summary of groundwater standpipe construction details	16
Table 2:	Summary of boreholes	19
Table 3:	Summary Groundwater level measurements	20
Table 4:	Summary permeability test results	21
Table 5:	Summary of Unconfined Compression Test.....	22
Table 6:	Field groundwater quality parameters	23
Table 7:	Summary of groundwater exceedances	24
Table 8:	Stratigraphic units	26
Table 9:	Ground conditions	27

Table 10: Design parameters for retaining structures and footings	28
Table 11: Estimated Preliminary Groundwater Inflow	29
Table 12: Exceedances of CT1 Waste Classification Criteria	34
Table 13: Summary of TCLP Results	35

FIGURES

Figure 1: Indicative Photomontage of the Concept Proposal	1
Figure 2: Site Location	2
Figure 3: Site Aerial	3
Figure 4: Commercial building occupying the site as viewed from Scott Street (north east)	4
Figure 5: Commercial building occupying the site as viewed from Scott Street (north west)	4
Figure 6: Above ground car parking structure as viewed from Terminus Street (south east)	4
Figure 7: Commercial building occupying the site as viewed from Scott Street (north east)	4
Figure 8: Rear car park of the commercial building as viewed from Terminus Street (south east)	4
Figure 9: Existing development from the south	5
Figure 10: Existing development from the south east	5
Figure 11: Retail and commercial buildings to the north	6
Figure 12: Higher density development to the north east	6
Figure 13: Macquarie Street to the north	6
Figure 14: George Street to the north	6
Figure 15: Two storey commercial building to the east of the George Street through site link	7
Figure 16: Two storey commercial building at the intersection of Scott and Terminus Street	7
Figure 17: Telstra Exchange building and adjoining retail tenancies to the south	7
Figure 18: Retail and medium density residential uses fronting Terminus Street to the south	7
Figure 19: Memorial Arts Building	8
Figure 20: Nine storey mixed use residential building to the west	8
Figure 21: Rear party wall presented to the site	8
Figure 22: Consolidated automotive service tenancies to the west	8
Figure 23: Aerial view of the site	9
Figure 24: Geological map	12
Figure 25: Site topography (value shown is in m AHD)	13
Figure 26: Investigation layout plan	15
Figure 27: Combined Hydrograph	20
Figure 28: Field measurements of excavations in rock	32
Figure 29: Excavatability of ground units	33

APPENDICES

APPENDIX A

Borehole Location Plan

APPENDIX B

Report of Borehole Logs

APPENDIX C

Geotechnical Laboratory Test Certificates

APPENDIX D

Waste Classification and Water Quality Analysis Test Certificates

APPENDIX E

Hydraulic 'Slug' Tests

APPENDIX F

Water Quality

APPENDIX G

Important Information

1.0 INTRODUCTION

This Geotechnical and Environmental Investigation Report is submitted to Liverpool City Council (Council) in support of a Development Application (DA) for site preparation and early works at 52 Scott Street, Liverpool (the site) also known as the Liverpool Civic Place site. Specifically, the DA seeks approval for:

- Demolition of all existing structures and site improvements; and
- Bulk earth works to a depth of RL +10.35 m AHD including shoring through the use of piles.

The proposal relates to the broader Liverpool Civic Place site redevelopment plan which is detailed within the Concept DA (DA/485/2019) submitted to Council on 17 September 2019. Specifically, the Concept Proposal seeks approval for various uses within proposed building envelopes, including:

- A building envelope with a maximum height of RL 43.45 for the purpose of an information and education facility (public library) use.
- A building envelope with a maximum height of RL 84.25 for the purpose of a public administration building use, and either (or a combination of) commercial premises or child-care centre uses.
- A building envelope with a maximum height of RL 118.85 which will accommodate either (or a combination of) commercial premises, educational establishments, tourist and visitor accommodation or boarding house (student accommodation) uses.
- A landscaping and public domain concept including the provision of a public through-site link running north to south through the site, connecting Scott Street to the north through to Terminus Street to the south; and
- A building envelope for a three-level shared basement car park across the entire site to accommodate parking for all future uses (approximately 413 spaces, to be determined as part of future detailed DAs) and accommodating a public car park to be owned by Council.

The detailed design of the Liverpool Civic Place will be subject of separate Stage 2 DA(s). The benefits of this approach would allow the expedited local assessment and determination of an application for these additional 'early works', which are key to ensuring the development can be delivered in a timely manner.



Figure 1: Indicative Photomontage of the Concept Proposal

Source: FJMT

2.0 SITE ANALYSIS

2.1 Site Location and Context

The Liverpool Civic Place site is located at 52 Scott Street and 306-310 Macquarie Street, Liverpool within the Liverpool City Council Local Government Area. However, the site to which the proposed works will occur, does not include the site at 306-310 Macquarie Street.

The site is located approximately 300m south west of Liverpool Railway Station and is also in the vicinity of a number of regionally significant land uses and features including Liverpool Hospital, Westfield Liverpool, Western Sydney University Liverpool Campus, the Georges River and Biggie Park public open space as illustrated at Figure 2 below.

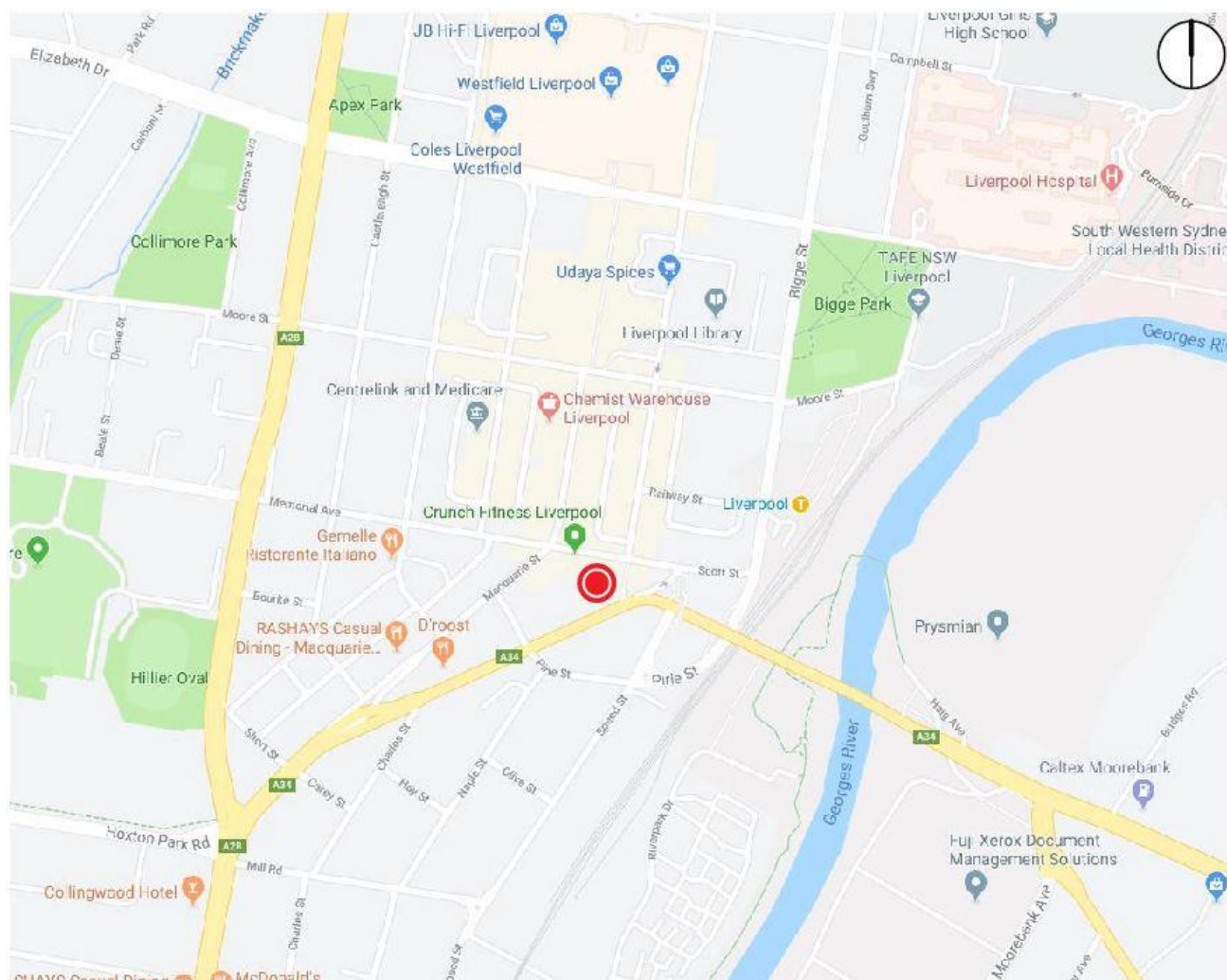


Figure 2: Site Location

Source: Google Maps and Ethos Urban

2.2 Site Description

This site is irregular in shape and is comprised of 11 lots, legally described below:

- Lot 1 in DP 514817;
- Lot 2 in DP 229979;
- Lot 17 in DP 81842;
- Lot 3 in DP 229979;
- Lot 11 in DP 522284;
- Lot 100 in DP 877435;
- Lot 12 in DP 657056;
- Lot 1 in DP 507070;
- Lot 22 in DP 441010;
- Lot 23 in DP 441010; and
- Lot 1 in DP 229979.

The site has a total area of 7190.4m² and has three primary road frontages including a primary frontage to Scott Street (98m frontage) to the north, George Lane (40m frontage) to the east and Terminus Street (115m frontage) to the south. An aerial photo of the site is shown in **Figure 3** below.

A Site Survey has been prepared and this illustrates that the site slopes to north with a fall of approximately 3.5m from its Terminus Street frontage (RL 25.95) to its Scott Street frontage (RL 22.74). The site is largely free of vegetation, with scattered grass cover present within the eastern vacant lots and street trees lining the Terminus Street boundary.

The site is largely occupied by a two-storey commercial building with a large frontage to Scott Street (Figure 4 and Figure 5). The commercial building is provided with an above ground car parking structure at the rear with a frontage to Terminus Street (**Figure 6**). The eastern portion of the site is occupied by a two-storey retail building (Figure 7) with an adjoining car park at the rear (Figure 8). The two existing buildings are divided by a central vacant lot.



Figure 3: Site Aerial

Source: Near Maps and Ethos Urban



Figure 4: Commercial building occupying the site as viewed from Scott Street (north east)



Figure 5: Commercial building occupying the site as viewed from Scott Street (north west)



Figure 6: Above ground car parking structure as viewed from Terminus Street (south east)



Figure 7: Commercial building occupying the site as viewed from Scott Street (north east)



Figure 8: Rear car park of the commercial building as viewed from Terminus Street (south east)

2.2.1 Access and Connectivity

Vehicular Access and Parking

The site has three street frontages, with Scott Street and Terminus Street being the primary street frontages. Scott Street functions as a collector road connecting Memorial Avenue through to Bigge Street and is aligned in an east-west direction. Scott Street is a two-way, two lane road within a 12m wide carriageway with no vehicle access points to the site. Terminus Street is a classified RMS road including a two-way, two lane road within a 13m carriageway. The site is currently provided with two left in/left out vehicle access points off Terminus Street (Figure 9 and Figure 10).



Figure 9: Existing development from the south



Figure 10: Existing development from the south east

Pedestrian Access

Scott Street, Terminus Street and Macquarie Street are well-established pedestrian routes, with Liverpool Railway Station and the Liverpool retail precinct to the north being major generators of footfall traffic around the site. The site's eastern boundary fronts the George Street pedestrian access way which links Scott Street to Terminus Street.

2.2.2 Heritage

The subject site does not contain a heritage item nor is it located in a heritage conservation area. The broader Liverpool Civic Place site (Lot 201 DP 1224084, 306-310 Macquarie Street) contains a heritage item, being the Memorial School of Arts building (I99). No site preparation or early works are proposed on this lot. The site is in the vicinity of several heritage items identified within the Liverpool LEP 2008. Notable amongst these heritage items includes:

- I89 – Plan of Town of Liverpool (Early town centre street layout – Hoddle 1827);
- I91 – Commercial Building (formerly Rural bank and State bank);
- I92 – Boer War Memorial, including memorial to Private A.E Smith;
- I93 – Macquarie Monument;
- I94 – Row of 3 palm trees; and
- I109 – Liverpool Fire Station.

2.3 Surrounding Development

The Liverpool CBD is a growing strategic centre within Greater Western Sydney, comprising a true mixed use character. The Liverpool CBD is currently presented with opportunities for renewal and urban transformation which reflects the precinct's strategic positioning between Parramatta as Sydney's Central CBD and the future Badgerys Creek Aerotropolis. The site's immediate surrounding context is outlined below.

North

Development to the north of the site, on the opposite side of Scott Street, includes retail and commercial buildings of two to three storeys, primarily containing retail and commercial uses (Figure 11). To the north east, the street block contains higher density commercial and service apartment uses (Figure 12). Further north, this development transitions into the Liverpool civic and retail centre bound by Macquarie Street (Figure 13) and George Street (Figure 14).



Figure 11: Retail and commercial buildings to the north

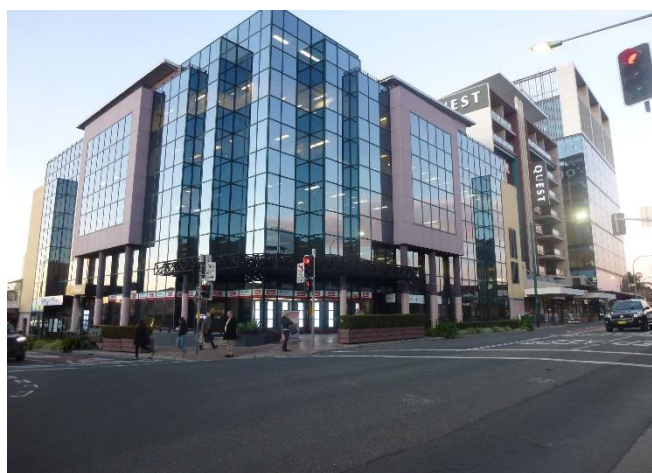


Figure 12: Higher density development to the north east

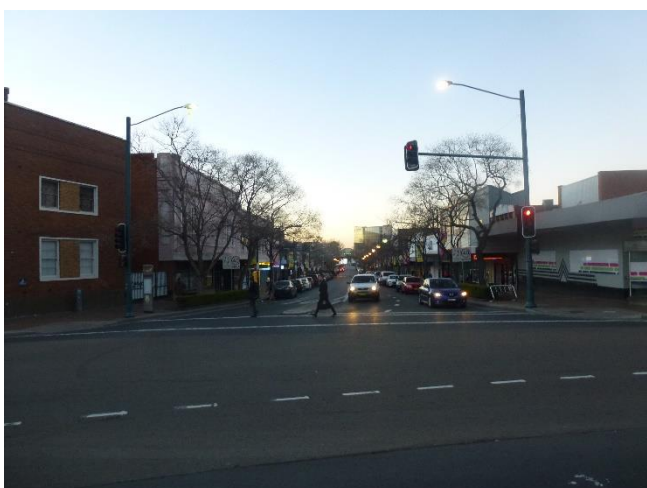


Figure 13: Macquarie Street to the north



Figure 14: George Street to the north

East

Development to the east of the site, on the opposite side of the eastern through site link, is a two-storey commercial building (Figure 15). This building is not listed as a heritage significant item. To the east of this building is a larger two storey commercial building (Figure 16), which extends to the Scott Street and Terminus Street intersection. The Georges River and Liverpool Railway Station are a further 300m from the site and effectively mark the eastern boundary of the Liverpool CBD.



Figure 15: Two storey commercial building to the east of the George Street through site link



Figure 16: Two storey commercial building at the intersection of Scott and Terminus Street

South

To the south of the site, and on the opposite side of Terminus Street, is the Telstra Exchange building that has a height of approximately four storeys (Figure 17). As well as this, various retail stores front Terminus Street. Further south of the commercial Terminus Street strip the area transitions to a residential character with a number of four to five storey residential flat buildings (Figure 18).



Figure 17: Telstra Exchange building and adjoining retail tenancies to the south



Figure 18: Retail and medium density residential uses fronting Terminus Street to the south

West

Immediately to the west includes the heritage listed Memorial Arts Building and surrounding public domain (Figure 19). To the rear of this building is a nine-storey mixed use development at 300 Macquarie Street (Figure 20). The mixed-use building presents a partial blank party wall to the site at the rear (Figure 21) and contains ground floor retail uses which are set back from the Memorial Arts Building and Macquarie Street. This adjoins a consolidation of low scale automotive service tenancies to the west (Figure 22).



Figure 19: Memorial Arts Building



Figure 20: Nine storey mixed use residential building to the west



Figure 21: Rear party wall presented to the site



Figure 22: Consolidated automotive service tenancies to the west

3.0 SCOPE OF THIS REPORT

This report presents the results of geotechnical and environmental investigation carried out by Golder Associates Pty Ltd (Golder) for the proposed mixed-use development known as Liverpool Civic Place at 52 Scott Street, Liverpool (the site) as shown in Figure 23.

The work was authorised by Built Pty Ltd (Built) in an email received on 27th June 2019. The investigation was conducted in accordance with our proposal (ref.: P19125312-001-P-Rev1) dated 20th June 2019.



Figure 23: Aerial view of the site

3.1 Project Understanding

The proposed mixed-use development is understood to consist of a public library, a hotel and a commercial building with a three-level basement car park. Built have informed us that the bulk excavation is at RL+10.35 m AHD.

The site is irregular in shape and has a total area of 7,325 m² and has three road frontages including a primary frontage to Scott Street (98 m frontage) to the north, George Lane (40 m frontage) to the east and Terminus Street (115 m frontage) to the south as shown in Figure 23.

The site is currently occupied by a two-storey commercial building with a large frontage to Scott Street. The commercial building has an above-ground car parking structure at the rear with a frontage to Terminus Street. The eastern portion of the site is occupied by a two-storey retail building with an adjoining car park at the rear. The two existing buildings are divided by a central vacant lot.

The only adjacent building in the vicinity with a basement is located to the north-west of the site. Based on the site walkover with representatives from Built on 11th June 2019, the building appears to be a nine-storey mixed-use apartment block with two and a half levels of basement. We have been informed that it is a drained basement.

We understand that the development of the site may be staged with the western side developed initially followed by the eastern side. In the event that the development is staged, a temporary battered solution at the staging interface can be considered as the development progresses.

3.2 Objective and Outcome

The objective of the investigation is to identify potential ground related risks to support the design of the basement structures and building foundations for the development. This has been addressed through the following investigations:

- Auger drilled holes with Standard Penetration Test (SPT) at intervals to assess the soil condition and for collection of soil samples for laboratory testing;
- Rock coring with Point Load Test at intervals to infer the rock strength and collection of rock core for laboratory testing; and
- Installation of groundwater monitoring wells in selected boreholes with in-situ permeability testing and collection of groundwater samples for laboratory testing.

The outcomes of the fieldwork program are to provide:

- Drained and undrained soil and rock design strength parameters;
- Young's modulus of soils and rocks;
- Advice on possible lateral retention and foundation options;
- Estimated groundwater inflow to the excavation site;
- Preliminary assessment of potential contamination issues that may pose a risk to the proposed development;
- Characterisation of groundwater quality for water seepage treatment and disposal requirements;
- Indicative waste classification of fill and underlying natural materials for off-site disposal; and
- Assessment and recommendation of additional investigations, testing and/or monitoring.

4.0 BACKGROUND INFORMATION

The following documents were reviewed in preparing this report:

- Preliminary Site (Contamination) Investigation (ref.: 85594.00.R.001.Rev1) by Douglas Partners (DP 2017a) dated 10th May 2017;
- Preliminary Groundwater Contamination and Waste Classification Assessment (ref.: 85594.00.R.002.Rev1) by Douglas Partners (DP 2017b) dated 10th May 2017;
- Preliminary Site Investigation (ref.: 85594.01.R.001) by Douglas Partners (DP 2019a) dated 15th April 2019;
- Preliminary Geotechnical Investigation (ref.: 85594.01.R.001) by Douglas Partners (DP 2019b) dated 18th April 2019; and
- Architectural drawings by FMJT (FMJT 2019) dated 1st July 2019.

5.0 REGIONAL GEOLOGY

The Penrith 1:100,000 Geological Map¹ indicates that the site is predominantly underlain by the Bringelly Shale followed by Ashfield Shale of the Wianamatta Group. Minchinbury Sandstone may be present, sandwiched between Bringelly Shale and Ashfield Shale as shown in Figure 24.

Figure 25 shows the site topography extracted from DFSI Spatial Services in m referenced from Australian Height Datum (AHD). The ground level along the southern part of the site (i.e. ~28 m AHD at Terminus Street) is approximately 2 m higher than the northern side (i.e. ~26 m AHD at Scott Street). The general ground level of the area is sloping down to Georges River (~ 4 m AHD at the edge of the river), approximately 300 m eastwards from the site.

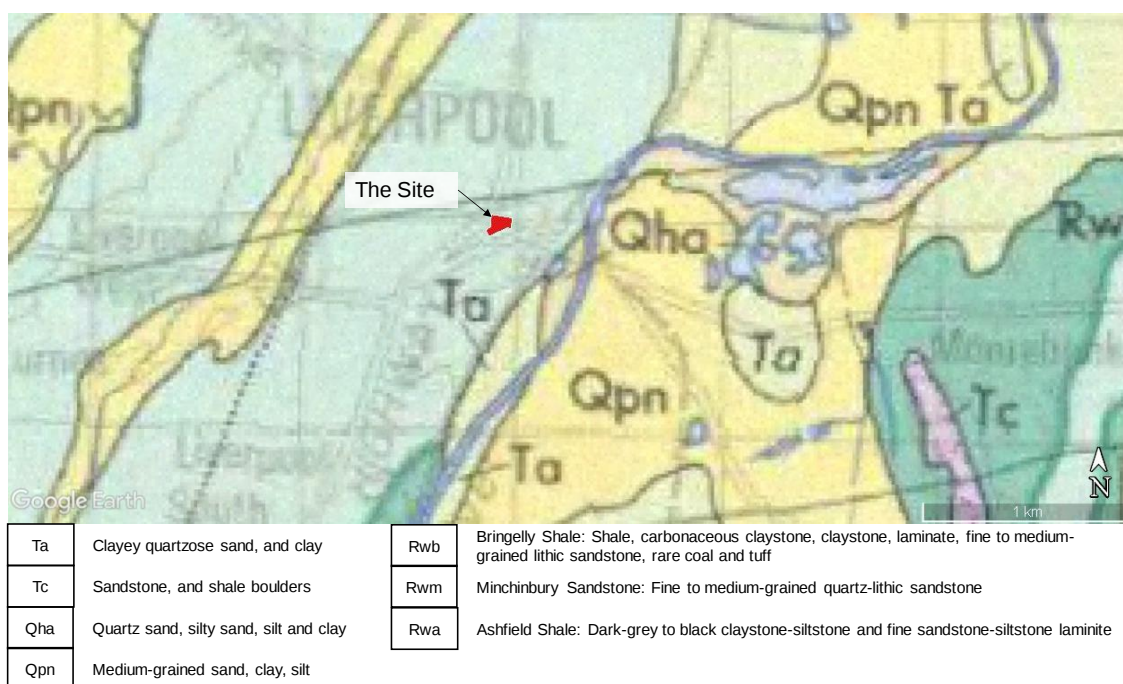


Figure 24: Geological map

¹ Clark N.R. and Jones D.C., 1991, Penrith 1:100 000 Geological Sheet 9030, 1st edition. Geological Survey of New South Wales, Sydney.



Figure 25: Site topography (value shown is in m AHD)

6.0 SCOPE OF WORK AND METHODOLOGY

The following summary describes the investigations carried out by Golder.

- Eight (8) boreholes to 15 m depth below ground level (bgl), ranging between 1 m to 3 m below the proposed bulk excavation levels;
- Three (3) hand-augured holes extended to the underlying fill material or prior refusal;
- Standard Penetration Test (SPT) was undertaken in selected boreholes;
- Point Load Index Test was conducted at approximately 1 m interval on retrieved rock cores;
- Two (2) groundwater monitoring wells was installed in selected boreholes;
- Groundwater level in four (4) monitoring wells, including the two existing monitoring wells installed by Douglas Partners (DP 2017b) were monitored.
- Permeability (slug) tests were carried out in all four monitoring wells;
- Representative soil samples, rock cores and groundwater samples were collected and were sent to NATA accredited laboratories for testing.

6.1 Borehole Investigation

Borehole locations (Figure 26) were surveyed using a hand-held GPS (accurate to within 3 to 5 m) and inferred from existing site features. The investigation layout plan is attached in APPENDIX A.

The drilling of boreholes commenced on the 8th July 2019 and finished on the 26th July 2019. Each investigation location was assessed for the presence of underground services using Dial Before You Dig Plans and an accredited underground service locator using passive scanning methods.

The boreholes were drilled by an experienced drilling subcontractor. Drill cuttings and drilling fluid were stored on-site during the investigation and subsequently disposed of by a licensed operator. Auger and rotary drilling techniques were used in soils and diamond bit coring in the rock to advance the boreholes. Standard Penetration Test (SPT) was carried out in soils and disturbed samples were recovered to assist with logging. Point Load Index Test and Unconfined Compression Test were carried out on recovered rock core.

The boreholes were logged in accordance with Australian Standard AS 1726-2017 “Geotechnical Site Investigations” and AS 1289.0-2000 “Method of Testing Soil for Engineering Purposes” and was supervised by a geotechnical engineer from Golder. The boreholes logs are attached in APPENDIX B.

The boreholes were grouted to the top of rock and backfilled with drilling cuttings with the surface being plugged, except for BH304 and BH306 where monitoring wells were installed.



Figure 26: Investigation layout plan

6.2 Installation of Groundwater Monitoring Wells

Groundwater monitoring wells were installed in BH304 and BH306. These locations were chosen to provide enough coverage with existing wells (i.e. BH1 and BH2) taking into account site access constraints.

Before installation of the monitoring wells, any drilling cuttings and water in the borehole were flushed out. The monitoring wells were constructed with 50 mm diameter acid-washed class 18 PVC casing and machine slotted well screen intervals. Joints were screw-threaded, thereby avoiding the potential interference of glues and solvents in groundwater quality results.

The annulus between the monitoring wells and the bore hole was backfilled with 2 mm filter gravel to 0.5 m above the top screen. A 1.0 m thick bentonite seal was installed above the gravel in each well, with the remaining annulus backfilled with gravel and cuttings. Each well was finished at surface level with a cement plug and covered with a gatic cover for protection. The well completion details for each monitoring well is attached in APPENDIX B with the respective borehole logs.

Following installation, BH304 and BH306 were developed by removing groundwater from the wells using a combination of bailers and foot valves with tubing. During the development, field parameters (i.e. pH, temperature, dissolved oxygen, electrical conductivity) were measured and recorded. Well development was finalised once ten well volumes were removed or until the well was dry three times and the field parameters had stabilized. The well construction details are summarised in Table 1.

Table 1: Summary of groundwater standpipe construction details

Detail	BH1 (DP 2017b)	BH2 (DP 2017b)	BH304	BH306
Ground Level	RL23.1	RL23.6	RL24.2 ¹	RL25.3 ¹
Bentonite seal thickness (m)	0.5	0.5	1.0	1.0
Screen Depth	From the base of the well to between 1.0 and 1.1 below ground level		From 15.2 m to 9.2 m below ground level	From 12.0 m to 9.0 m below ground level
Bottom of Well (below ground level and elevation)	11.7 m RL11.7	14.0 m RL9.6	15.2 m RL9.0	15.1 m RL10.2
Well development date	-	-	24 July 2019	24 July 2019

¹ – Estimated from architectural drawings and existing site features

6.3 Groundwater sampling

Groundwater samples were collected on 2 August 2019 from all four monitoring wells (BH1, BH2, BH304 and BH306) using an electric powered peristaltic pump, which is a low flow sampling method.

During sampling a length of ¼-inch low-density polyethylene (LDPE), was connected to a base-fed flow-cell where measurements of fluid pH, electrical conductivity, redox potential, dissolved oxygen and temperature were recorded at regular intervals.

Groundwater samples were collected from the outflow tube once measurements of the above-listed field parameters had stabilized. Disposable nitrile gloves were used for sample collection and a new pair of nitrile gloves was used during the collection of each sample.

The groundwater samples were stored in containers provided by the laboratory. The containers were then immediately placed in a cool box in which ice was added to maintain the samples at a temperature of 4 °C or less and sent to the NATA credited laboratory.

6.4 Permeability Tests

Permeability tests (hydraulic ‘slug’ tests) were carried out between 23 and 26 July 2019 in all four monitoring wells to estimate the hydraulic conductivity of the formation. The tests were performed by removing one litre of groundwater using a bailer and measuring the subsequent groundwater level response using a water level meter and an automated groundwater level logger.

After removing 1 bailer of water from BH2 on 23 July 2019, the water level did not recover to its original level. This well was then bailed further until creating a 3.8 m groundwater level drawdown and the recovery was recorded.

It should be noted that at BH1 and BH2 the groundwater level is located within the screened section and as such all the conditions for analysing slug tests are not met.

The field records of the tests are presented in APPENDIX F-1.

6.5 Laboratory Testing

Laboratory testing of representative samples recovered from boreholes was carried out in at the Macquarie Geotech Pty Ltd and ALS Environmental Pty Ltd NATA-accredited laboratories.

6.5.1 Geotechnical Testing

Four (4) unconfined compression strength (UCS) tests were carried out on selected rock cores.

6.5.2 Soil Quality Testing

Selected samples recovered from the boreholes were submitted to NATA accredited laboratories for the following Constituents of Potential Concern (COPC):

- Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX);
- Volatile Organic Compounds (VOCs);
- Semi-Volatile Organic Compounds (SVOCs);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc;
- Polychlorinated Biphenyls (PCBs);
- Per- & polyfluoroalkyl substances (PFAS);
- Asbestos (presence/absence);
- Acid Sulfate Soil (ASS) screen;
- Suspension Peroxide Oxidation Combined Acidity and Sulphur (SPOCAS); and
- Toxicity Characteristic Leaching Procedure (TCLP) for metals and PAHs.

Waste Classification and Water Quality Analysis Test Certificates are provided in APPENDIX D-1.

6.5.3 Groundwater Quality Testing

The groundwater samples were analysed in a NATA accredited laboratory for:

- Major anions (chloride, sulphate, carbonate, fluoride and bicarbonate);
- Major cations (magnesium, potassium, calcium and sodium);
- Dissolved heavy metals (arsenic, cadmium, chromium, copper, lead iron, manganese, nickel mercury and zinc);
- Nutrients (ammonia, nitrate, nitrite and total phosphorus);
- Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene (BTEXN), Total Recoverable Hydrocarbons (TRH) and Polynuclear Aromatic Hydrocarbons (PAH); and
- Per- and polyfluoroalkyl substances (PFAS).

Due to limited volume in the groundwater samples, PFAS were analysed in BH2 and BH306 and nutrients were analysed in BH1 and BH304, only.

Measurement of pH, electrical conductivity, dissolved oxygen, oxidation-reduction potential and temperature were also recorded at the time of sampling.

The groundwater sampling records are presented in APPENDIX E-1 and the Certificates of Analysis are presented in APPENDIX E-2.

7.0 RESULTS OF INVESTIGATION

The results of the investigation are presented in the following sections.

7.1 Subsurface Investigation

Table 2 summarises the details of the borehole investigations including the location and the depth achieved on site. The investigation layout and cross-sections are attached in APPENDIX A.

Table 2: Summary of boreholes

Borehole	Coordinates ¹		Ground Level ² (m AHD)	Termination Depth ³ (m BGL)	Termination Reason
	Easting	Northing			
BH301	308040	6244214	22.3	15.2	Target depth
BH302	308031	6244139	22.3	15.2	Target depth
BH303	308018	6244149	23.3	15.0	Target depth
BH304	308036	6244123	24.2	15.2	Target depth
BH305	308073	6244146	26.1	15.2	Target depth
BH306	308101	6244174	25.3	15.1	Target depth
BH307	308125	6244162	25.1	15.7	Target depth
BH309	308067	6244209	22.4	15.0	Target depth
BH402	308044	6244136	26.1	0.2	Refusal ⁴
BH403	308058	6244144	26.1	0.4	Refusal ⁴
BH404	308085	6244162	26.1	0.9	Refusal ⁴

¹ – Handheld GPS accuracy to Map Grid of Australia (MGA94)

² – Referenced to Australian Height Datum (AHD), inferring from the provided architectural plans and existing site features

³ – Below ground level (BGL)

⁴ – Practical hand auger refusal encountered

7.2 Groundwater

7.2.1 Groundwater Level

Groundwater levels were measured manually regularly between 23 July and 2 August 2019 at BH1 and BH2 and between 23 July and 6 August 2019. Two loggers were also used during the permeability tests and for ongoing monitoring of the groundwater levels in BH304 and BH306.

Table 3 includes the measurement of groundwater level at BH1 and BH2 as measured by Douglas Partners on 1 September 2016 (DP 2017b) and the recent groundwater levels measured before the groundwater sampling event on 2 August 2019.

Table 3: Summary Groundwater level measurements

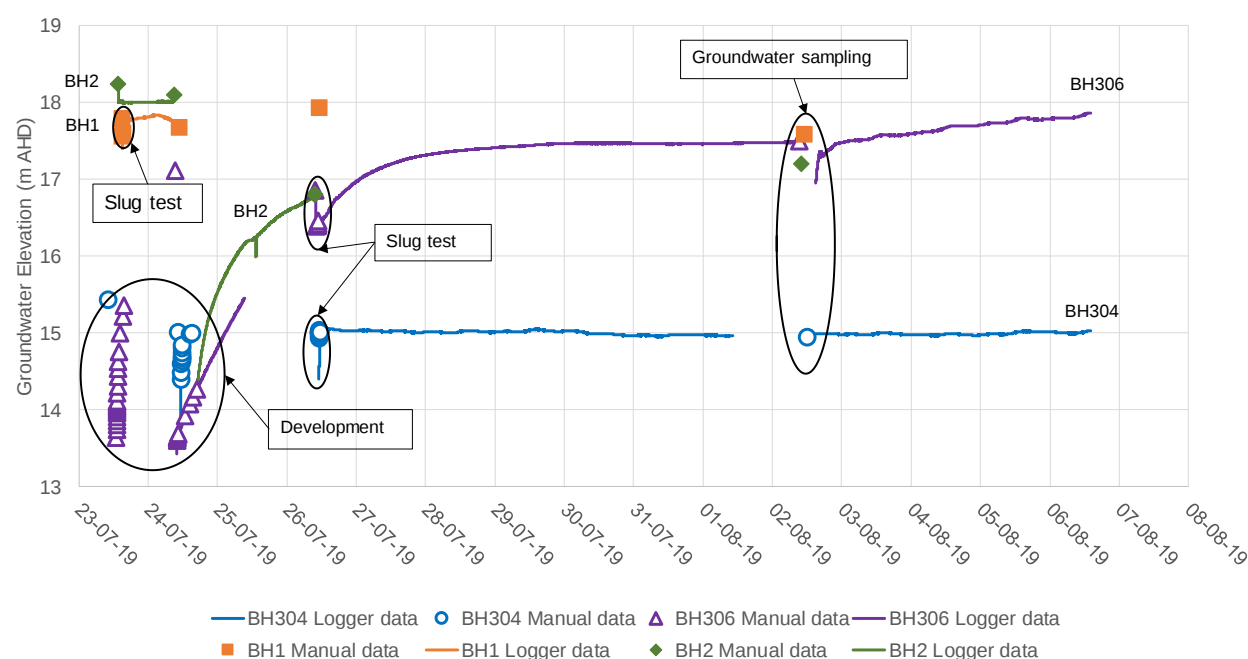
Borehole	Water level measured on 1 September 2016 ¹		Water level measured on 2 August 2019	
	m bgl	m AHD	m bgl	m AHD
BH1	4.8	18.3	5.51	17.6
BH2	6.7	16.9	6.39	17.2
BH304	-	-	9.34	15.0
BH306	-	-	7.80	17.5

¹ – Extracted from DP 2017b

The 2019 groundwater level measured at BH1 was 0.7 m lower the 2016 groundwater level, while the in BH2 the 2019 groundwater level was 0.3 m higher than in 2016, resulting in a significantly lower hydraulic gradient at the site in 2019 compared to in 2016.

The groundwater level measured at BH306 in 2019 is consistent with the groundwater level measured in the two existing DP well and the groundwater table is at approximately 17.5 m AHD. The groundwater level measured at BH304 is approximately 2.5 m lower than the other wells (at 15.0 m AHD). The lower groundwater level measured at BH304 is considered to be related to the intersection of the more permeable fractured zone at this location (refer to section 7.2.2).

A combined hydrograph was constructed showing the groundwater levels measured in all four monitoring wells between 23 July 2019 and 2 August 2019 (for BH1 and BH2) and 23 July 2019 and 6 August 2019 (for BH304 and BH306). The hydrograph is presented in Figure 27.

**Figure 27: Combined Hydrograph**

From Golder's experience, groundwater level in the sandstone may fluctuate seasonally by up to one metre. There is currently insufficient data to provide a site-specific seasonal variation in groundwater level.

The regional groundwater flow is expected to follow the general regional topography towards the east and discharge into Georges River. This corresponds well with the 2019 groundwater level measurements in BH1, BH2 and BH304, which indicate a groundwater flow direction at the site towards the northeast. The 2.5 m lower groundwater level measured at BH304, suggest that the intersected fracture zone and this location is not directly hydraulically connected to the bulk rock where the other wells on the site are screened.

It should also be noted that no perched groundwater was identified while drilling through the shallow fill on top of the weathered rock, indicating that there was no perched groundwater in that unit during the time of drilling. However, it is possible that temporary perched conditions could occur following rainfall events until the water has infiltrated into the below units.

7.2.2 Permeability

The permeability (hydraulic conductivity) was estimated from the hydraulic 'slug' tests field data using the Bouwer and Rice (1976)² method using the software *Aqtesolv*TM. The estimated hydraulic conductivities are provided in Table 4 and the *Aqtesolv*TM output are presented in APPENDIX F-2.

Table 4: Summary permeability test results

Well	Estimated Permeability K (m/s)	Comment
BH1	2×10^{-8}	-
BH2	-	Groundwater level did not recover (over 12 hours) after removing 1 L with a bailer, suggesting low permeability
BH2 additional test during recovery	6×10^{-10}	Modified test carried out after failed slug test. Groundwater was removed from well to create a greater groundwater level drawdown hydraulic gradient toward the well and recovery was then recorded.
BH304	2×10^{-6}	Permeability may be up to 1×10^{-5} m/s depending on the thickness of the fracture zone.
BH306	3×10^{-9}	-

Based on the results of the slug tests carried out at BH1, BH2 and BH304 the average estimated hydraulic conductivity in the bulk rock is around 9×10^{-9} m/s, which is consistent with competent sandstone (Pells et al, 2019)³. The estimated hydraulic conductivity of 2×10^{-6} m/s in BH304 is believed to be associated with the fractured rock zone that the well has been screened across.

² Bouwer and Rice 1976. A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water resources research, 1976.

³ Pells P.J.N, Mostyn G., Bertuzzi R. & Wong P.K. (2019). Classification of sandstones and shales in the Sydney region: A forty year review. Australian Geomechanics, 54(2), 29-55.

7.3 Results of Laboratory Testing

7.3.1 Unconfined Compression Test

Table 5 summarises the results of unconfined compression test on the recovered rock core.

The test certificates are attached in APPENDIX C.

Table 5: Summary of Unconfined Compression Test

Borehole	Depth (m bgl)	Material ¹	Uniaxial Compressive Strength (MPa)
BH305	5.5 – 5.8	Unit 3a L-M Laminite	22
BH307	7.5 – 7.7	Unit 3b M-H Laminite	18
BH301	11.1 – 11.4	Unit 4 H-VH Sandstone	22
BH304	13.5 – 13.8	Unit 4 H-VH Sandstone	32

¹ – Classification as summarised in Section 8.0 of this report

7.3.2 Soil Assessment Criteria

Screening levels for soil were selected with reference to the following:

- *Assessment of Site Contamination (ASC) (amended 2013), National Environmental Protection Measure (NEPM)*; and
- *HSLs for Petroleum Hydrocarbons in Soil and Groundwater* (Cooperative Research Centre, Contamination Assessment and Remediation of the Environment (CRC CARE)) (Friedel & Nadebaum, 2011).

Based on the proximity of potentially impacted soil to the proposed basement car park walls and the potential for workers to come into contact with soil during excavation works, soil samples were screened against the following criteria:

- Health Screening Levels (HSLs) and Health Investigation Levels (HILs) for commercial/industrial land use (HSL-D); and
- HSLs for direct contact for intrusive maintenance workers.

7.3.3 Soil Analytical Results

Laboratory analytical results of soil samples collected as part of the investigation did not indicate concentrations of any COPC in excess of the nominated screening criteria. Asbestos was positively identified at one location (BH306). A copy of the laboratory analytical report and chain of custody documentation is included in APPENDIX D-1. Soil analytical results are summarised in a table and is attached in APPENDIX D-2.

7.3.4 Groundwater Assessment Criteria

Screening levels for groundwater were selected with reference to the following:

- ASC (amended 2013), NEPM; and
- *HSLs for Petroleum Hydrocarbons in Soil and Groundwater*, CRC CARE (Friedel & Nadebaum, 2011).
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2018 (ANZG, 2018)*⁴.
- Per- and polyfluoroalkyl substances (PFAS) guideline values for aquatic ecosystems, published by the Heads of EPAs Australia and NEW Zealand (HEPA) (2018)⁵;

Screening levels for groundwater were based on the following considerations:

- Current and proposed land use of the site is commercial/industrial;
- Surrounding land use is commercial/industrial;
- The nearest surface water body (Georges River) is located approximately 300 m east of the Site;
- Groundwater occurs at approximately 5.5 m bgl; and
- Lithology beneath the Site is generally comprised of laminate and sandstone.

Based on the information provided above, groundwater samples were screened against HSLs for commercial/industrial land use with a clay soil type at the 4 m to <8 m and 8 m+ depth intervals.

The groundwater quality criteria have been established for groundwater contamination assessment only, for construction dewatering and long-term seepage discharge disposal, the groundwater quality will need to be assessed against site-specific sewer and stormwater disposal criteria.

7.3.5 Groundwater Analytical Results

Table 6 presents the water quality field parameters measured during the sampling event on 2 August 2019.

Table 6: Field groundwater quality parameters

Well	BH1	BH2	BH304	BH306
Sampling date	2/08/2019	2/08/2019	2/08/2019	2/08/2019
pH	7.53	7.33	7.62	7.49
Electrical conductivity (µS/cm)	1490	4108	1963	2801
Dissolved oxygen (ppm)	4.76	0.44	0.78	0.5
Oxidation Reduction Potential (mV)	-51.4	31.1	-200	13.2

A copy of the laboratory analytical report and chain of custody documentation is included in APPENDIX E-2 while all the analytical results are presented in the table APPENDIX E-3.

⁴ ANZG 2018, Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, 2018. <https://www.waterquality.gov.au/anz-guidelines>, accessed 20 August 2019.

⁵ HEPA 2018. PFAS National Environmental Management Plan, The Heads of EPAs Australia and New Zealand (HEPA), 2018.

The groundwater quality results from the groundwater sample collected from all four groundwater monitoring wells indicate that:

- Groundwater is neutral and fresh (BH1) to brackish (BH2, BH304 and BH306).
- The dominant anion is chloride and the dominant cation is sodium.
- Total alkalinity ranges between 20 mg/l to 39 mg/L indicating minimal buffering capacity.

A summary of groundwater exceedances is provided in Table 7 along with the value of the criterion exceeded. It should be noted that criteria was only exceeded for the concentrations established in ANZG 2018 and HEPA 2018.

Table 7: Summary of groundwater exceedances

Monitoring well	Analyte	Concentration (µg/L)	Criterion Value (µg/L)	Criterion Exceeded
BH1	Nitrate as N	4.26 mg/L	0.7 mg/L	ANZG 2018
BH2	Dissolved Copper	3	1.3	ANZG 2018
BH306	Dissolved Zinc	41	15	ANZG 2018
	Perfluorooctanesulfonic acid (PFOS)	0.28	0.13	HEPA 2018

In addition, the following contaminant analytes were detected:

- Various other Per- and polyfluoroalkyl substances (PFAS) were detected in BH306 while no PFAS were detected in BH2. BH1 and BH304 were not analysed for PFAS.
- Various total recoverable hydrocarbons were detected in BH304 but not in any of the other wells.
- Benzene and Toluene were detected in BH304 at 3 µg/L and 6 µg/L, respectively, but were not detected in any other well.
- Various dissolved metals were detected in the groundwater samples:
 - Dissolved Manganese was present in the samples from all wells in concentrations varying between 6 µg/L (BH1) and 992 µg/L (BH304).
 - BH2 also presented concentrations in dissolved Arsenic, dissolved copper and dissolved Nickel of 4 µg/L, 3 µg/L and 5 µg/L, respectively.
 - BH304 also presented concentrations in dissolved Aluminium, dissolved Iron and dissolved Nickel of 60 µg/L, 240 µg/L and 6 µg/L, respectively.
 - BH306 also presented concentrations in dissolved Aluminium, dissolved Arsenic, dissolved Nickel and dissolved Zinc of 20 µg/L, 3 µg/L, 7 µg/L and 6 µg/L, respectively.
- No Polynuclear Aromatic Hydrocarbons (PAH) were detected onsite.

It should be noted that most laboratory analytical results for BH1 and BH2 are consistent with the results from 2016 (DP 2017a), though we note that PFAS was not detected in the 2019 sample (it was detected in 2016).

Based on the laboratory analytical results the groundwater quality at BH304 is observed to be slightly different to the surrounding wells (BH1, BH2 and BH306) with various hydrocarbons detected in this well which were not detected in the surrounding wells. As discussed previously, the groundwater levels and the results of the permeability testing (section 7.2.1 and section 7.2.2) suggest that the fractured rock is in hydraulic connection with a zone of lower groundwater head. As the hydrocarbons were not detected in the surrounding wells this may suggest that these contaminants are coming from the fracture zone and are not present in the bulk rock at the site. An additional round of groundwater quality testing should be carried out to confirm this.

8.0 GROUND MODEL

Based on the results of the geotechnical investigation and associated testing, we have developed ground units to summarise the typical subsurface profile encountered across the site. Table 8 presents the ground model, which is broadly consistent with.

Table 8: Stratigraphic units

Ground Unit ¹	Inferred Subsurface Conditions
Unit 1 Filling	The fill generally comprised clay with variable proportions of gravel and sand. The thickness and composition of fill materials are expected vary across the footprint of the site.
Unit 2 St-H Residual clay	Residual clay was encountered underlying fill and was generally high plasticity and stiff consistency overlying a low to medium plasticity very stiff to hard sandy clay.
Unit 3a L-M Laminite	Laminite comprising interbedded siltstone and sandstone bands of varying thicknesses and degrees of weathering. grades with depth from low to medium strength and was highly weathered.
Unit 3b M-H Laminite	Laminite comprising interbedded siltstone and sandstone bands of varying thicknesses and degrees of weathering. was generally medium to high strength and highly to moderately weathered. Interbedded with bands of low to medium strength siltstone of varying thicknesses.
Unit 4 H-VH Sandstone	Sandstone, generally high to very high strength and slightly weathered to fresh. Interbedded with bands of medium to high strength siltstone of varying thicknesses.

¹ – Stiff (St), Hard (H), Low to medium strength (L-M), Medium to high strength (M-H), High to very high strength (H-VH)

Table 9: Ground conditions

Ground Unit ¹	Depth to Top of Unit (m)									
	BH1 ²	BH2 ²	BH301	BH302	BH303	BH304	BH305	BH306	BH307	BH309
Unit 1 Filling	0 RL23.1	0 RL23.6	0 RL22.3	0 RL22.3	0 RL23.3	0 RL24.2	0 RL26.1	0 RL25.3	0 RL25.1	0 RL22.4
Unit 2 St-H Residual clay	-	0.3 RL23.3	0.2 RL22.1	0.3 RL22.1	0.8 RL22.5	0.7 RL23.5	1.0 RL25.1	1.4 RL24.0	0.3 RL24.8	0.4 RL22.1
Unit 3a L-M Laminite	0.4 RL22.7	1.3 RL22.3	2.8 RL19.5	2.6 RL19.7	3.5 RL19.8	4.0 RL20.2	4.9 RL21.2	4.4 RL20.9	4.1 RL21.0	2.5 RL19.9
Unit 3b M-H Laminite	5.8 RL17.3	-	5.9 RL16.4	4.3 RL18.0	6.7 RL16.6	5.8 RL18.4	7.6 RL18.5	7.9 RL17.4	6.7 RL18.4	7.0 RL15.4
Unit 4 H-VH Sandstone	9.5 RL13.6	7 RL16.6	10.8 RL11.5	9.0 RL13.3	9.5 RL13.8	10.9 RL13.3	12.7 RL13.4	12.5 RL12.8	11.6 RL13.5	10.4 RL12.0
End of Borehole	11.7 RL11.4	14 RL9.6	15.2 RL7.1	15.2 RL7.1	15.0 RL8.3	15.2 RL9.0	15.2 RL10.9	15.1 RL10.2	15.7 RL9.4	15.2 RL7.2

¹ – Stiff (St), Hard (H), Low to medium strength (L-M), Medium to high strength (M-H), High to very high strength (H-VH)

² – Borehole investigation carried out by Douglas Partners (DP 2019a)

9.0 DISCUSSION AND RECOMMENDATION

9.1 Geotechnical Design Parameter

Table 10 summarises the design parameters that can be used for the design of retention systems and footings.

Table 10: Design parameters for retaining structures and footings

Ground Unit	Bulk Unit Weight (kN/m ³)	Soil Effective Strength Parameters		Ultimate Bearing Pressure under Vertical Loading	Serviceability Bearing Pressure under Vertical Loading ¹	Elastic Modulus for loading (MPa) ³	Poisson's Ratio	At Rest Earth Pressure Coefficient, K _o	Ultimate Anchor Bond Strength (kPa)
		c' (kPa)	φ' (°)						
Unit 1 Filling	17	-	-	-	-	10	0.3	0.5	-
Unit 2 St-H Residual clay	18	5	28	-	-	20	0.3	1.0	50
Unit 3a L-M Laminite	24	50	38	3,000	1,000	200	0.25	1.0	150
Unit 3b M-H Laminite	24	200	40	35,000	4,000	1,200	0.2	See Note ²	800
Unit 4 H-VH Sandstone	24	400	43	70,000	7,500	2,000	0.2	See Note ²	2,000

¹ – Settlement of less than 1 % of the footing width is expected at the allowable bearing pressure

² – The horizontal stress is approximated to be in the order of 1.5 MPa (this is further discussed in Section 9.4)

³ – An unloading modulus for retaining wall design can be estimated by applying a factor of 2 to the provided loading modulus values.

9.2 Hydrogeological Assessment

Based on the field information gathered onsite it is estimated that the base of the basement will be approximately 7 m below the current static groundwater level (as measured in BH1, BH2 and BH306) and groundwater will flow into the excavation from the bulk rock (primary porosity) and more importantly from the fractured rock (secondary porosity).

9.2.1 Groundwater Inflow

The permeability of the bulk rock is estimated to be in the order of 9×10^{-9} m/s while the permeability of the intersected fracture zone in BH304 is estimated to be in the order of 2.4×10^{-6} m/s. The permeability could vary significantly in different fracture zones, depending on their extent and connectivity to water-bearing features.

Preliminary groundwater inflow was estimated for the following three scenarios:

1) **Scenario 1 (All fractured zones are treated):**

We have assumed that all fracture zones are treated when encountered during excavation, which would minimize the inflow from these zones. The resulting groundwater inflow would, therefore, be from the exposed bulk rock through the walls and floor of the excavation. We note that though it is assumed that all fractured zones are treated in this scenario, not all the fractures would require treatment, but the extent and the performance of the treatment would depend on the seepage rate observed on site

2) **Scenario 2 (Fractured zones are not treated)**

We have assumed groundwater inflow is from both the exposed bulk rock and the fracture zones. The permeability adopted for the fracture zone is based on the permeability measured from the hydraulic testing in BH304. Note that the inflow from the fracture zone could be highly variable. Flow, in this case, is through the walls (including larger flows through fractured zones of rock) and the floor of the excavation.

3) **Scenario 3 (Inflow from exposed Unit 4 only)**

Assuming all the fractured zones and laminite (Unit 3a and Unit 3b) are sealed, via a tanked structure, but allowing groundwater inflow from Unit 4 and through the bottom of the basement.

Table 11 summarises the estimated groundwater inflow based on analytical calculations.

Table 11: Estimated Preliminary Groundwater Inflow

Scenario	Boundary Conditions	Construction Dewatering (kL/day)	Long-Term Seepage (ML/year)
1	All fractured zones are treated	<5	<0.4
2	Fractured zones are not treated	9 to 16	1.1 to 2.2
3	Inflow from exposed Unit 4 only	-	<0.2

We recommend that additional assessments be undertaken to obtain a better estimate of long-term inflow rates (including potential numerical groundwater modelling) and to assess the extent of off-site groundwater level drawdown, impacts of contaminants in groundwater on basement users and water treatment and disposal options.

9.2.2 Groundwater Quality

Based on the laboratory results presented in section 7.3.5 the groundwater quality results from all four groundwater monitoring wells indicate that:

- Groundwater is neutral and fresh (BH1) to brackish (BH2, BH304 and BH306).
- The dominant anion is chloride and the dominant cation is sodium.
- Various dissolved metals were detected in the groundwater (Iron, Manganese, Aluminium, Arsenic, Copper, Nickel and Zinc) with varying concentrations depending on the monitoring well.
- Various other Per- and polyfluoroalkyl substances (PFAS) were detected in BH306 while no PFAS were detected in BH2. BH1 and BH304 were not analysed for PFAS.
- Various total recoverable hydrocarbons were detected in BH304, but not in any of the other wells.

As described in section 7.3.5 the hydrocarbons detected at BH304 were not detected in the other monitoring wells which may suggest that they are localized in the fractured zone identified in that monitoring well and not present in the bulk rock at the site. Further groundwater testing should be carried out to confirm this.

The groundwater quality results indicate that some treatment of the groundwater would be required prior to disposal during both construction and for long-term seepage. The treatment requirements would depend on the discharge disposal option (e.g. stormwater or sewer) and assessed against site-specific sewer and stormwater disposal criteria.

9.3 Recommended Retention System

An anchored retention system is recommended to be required from ground level to the bottom of lower strength Laminite layer (i.e. Units 1, 2 and 3a). Spot rock bolting would likely be then required to provide support to any potentially unstable wedges in Units 3b and 4. Finite element modelling is recommended for the selected retention system. Golder can provide hydrogeological, geotechnical and structural analysis and design of basement retention systems and should be approached for further advice on this when required.

Based on the estimated groundwater inflow rate for the permanent condition (i.e. 2.2 ML/year), it is anticipated that seepage into the excavation could be controlled by perimeter and subfloor drainage connected to a sump-and-pump system. On this basis, a drained basement may be considered for this site. A high-level overview of issues to be considered for a drained basement is included below:

- Temporary drainage would need to be provided during construction to manage estimated water inflows. Water would need to be managed from excavation walls and an allowance made for pumping and disposal of this water.
- The amount of groundwater inflow could be reduced by pre-grouting fractured zones within the rock. This method would also reduce the risk of the groundwater inflow causing adverse impacts to surrounding areas.
- Retention for a drained basement would likely require anchored soldier piles with shotcrete infill or an anchored shotcrete wall for Units 1, 2 and 3a.
- Vertical cuts can be carried out in the underlying competent rock (i.e. Units 3b and 4). Lateral movement of rock due to stress relief of horizontal stress of competent rock layer is expected and discussed in detail in the subsequent section, Section 9.4.

- At each excavation stage, the exposed rock faces shall be inspected and mapped by a suitably experienced geotechnical engineer or engineering geologist. Depending on the condition of the exposed rock, spot bolting may be required.
- Appropriate drainage systems or additional grouting would be required in zones where water inflow remained present during bulk excavation.
- Additional groundwater testing and numerical modelling would be required to further assess the inflow rates and potential external impacts as well as for grouting requirements to be assessed if this option is pursued.

9.4 In-Situ Stress

The existence of horizontal in situ stresses at shallow depths, exceeding the vertical stress due to gravity, is a well-established phenomenon in the Sydney Basin (McQueen, 2004). The adverse effects of these stresses, combined with horizontal bedding, have been demonstrated in various civil engineering excavations.

Site-specific consideration of in-situ stress should consider the method of excavation and the proximity to existing adjacent excavations if any. These excavations may have the effect of relieving horizontal in-situ stress or concentrating it if the area through which the stress is transmitted is reduced by excavation.

Stress deviations from those presented below may locally vary due to other factors such as:

- Layered rocks of varying thickness
- Topography
- Paleochannels
- Depth
- Geological structures
- Variation in rock mass stiffness
- Known future developments

The influence of the factors indicated above on this initial in-situ stress field should be assessed, prior to the modelling of the excavation to estimate the residual stress for design. If 2D models are being considered, then the geometry of the excavation should be considered as 3D buttressing effects near the corners of deep excavations should be accounted for.

Based on the suggested major horizontal stress from Bertuzzi (2014)⁶, the in-situ horizontal stress in competent rock (i.e. Unit 3b and Unit 4) is approximated to be in the range between 1.5 MPa to 2 MPa, not more than 3 MPa. This in-situ horizontal stress may be lower than expected as the site is located on relatively high ground in the region, with relief to the north-west direction in general, as well as to the east, towards Georges River. Higher stress may be concentrated and locked-in within the competent band of sandstone within the laminate in Unit 3b and Unit 4. Note that the previous excavation of the existing basement located to the north-west of the site may have also relieved part of the stresses within that area.

Based on measurements reported by Oliveira & Wong (2012)⁷, the lateral movement of rock due to stress relief of horizontal stress of this competent rock layer is expected to be in the order of 5 mm towards the base of the

⁶ Bertuzzi, R. (2014). Sydney sandstone and shale parameters for tunnel design. *Australian Geomechanics*, 49(1), 1-40.

⁷ Oliveira, D. A. F., & Wong, P. K. (2012, July). Selection of Rock Mass Design Parameters for Assessing Excavation Induced Movements in the Sydney CBD. In *Proceedings: ANZ 2012 Conference*, Melbourne (pp. 15-18).

excavation. The lateral movement induced by stress relief within the competent rock layer may influence the deflection of the shoring wall. Soil-structure interaction analysis will assist in understanding this interaction better.

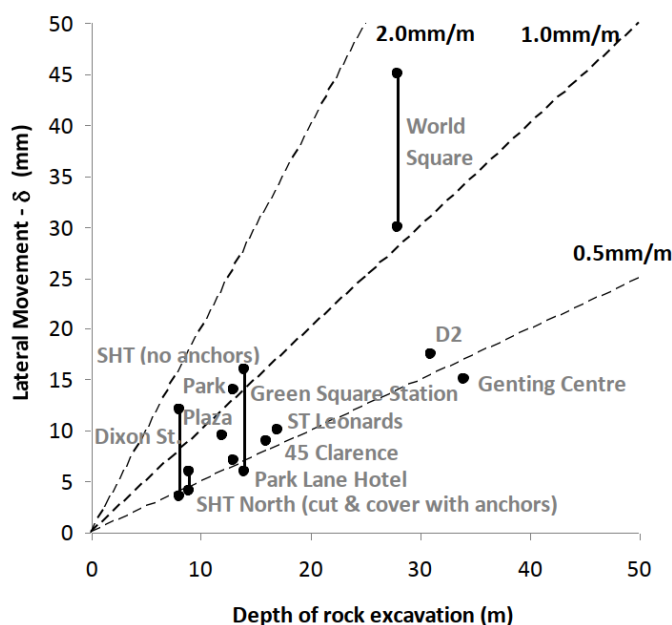


Figure 28: Field measurements of excavations in rock

9.5 Excavatability

An excavatability assessment is presented based on the material encountered during the investigation as shown in Figure 29. This assessment is based on the method of Pettifer and Fookes (1994)⁸. The fracture spacing and point load index for each material included on the figure are based on available borehole information.

The expected ground condition during excavation are presented in Section 8.0. Ground Unit 1 and Unit 2 are expected to be excavated using conventional earthmoving equipment. Rock excavation is expected to range from easy to extremely hard ripping with use of rock breakers in higher strength zones.

When selecting plant for excavation in rock units, consideration should also be given to the joint spacing in laminite and sandstone which is often widely spaced relative to bedding. In places, sub-vertical jointing in the massively bedded Hawkesbury sandstone can be widely spaced, and hence the maximum block size can be large, as measured laterally. This can result in low ripping productivity, which can be improved by pre-cutting blocky formations (such as Class I, II or III) using rock saws or similar. The effects of vibration from rock cutting and rock breaking may have a significant impact on adjacent structures. Appropriate construction methodologies should be used to limit noise and vibrations to acceptable levels.

⁸ Pettifer, G. S., & Fookes, P. G. (1994). A revision of the graphical method for assessing the excavatability of rock. Quarterly Journal of Engineering Geology and Hydrogeology, 27(2), 145-164.

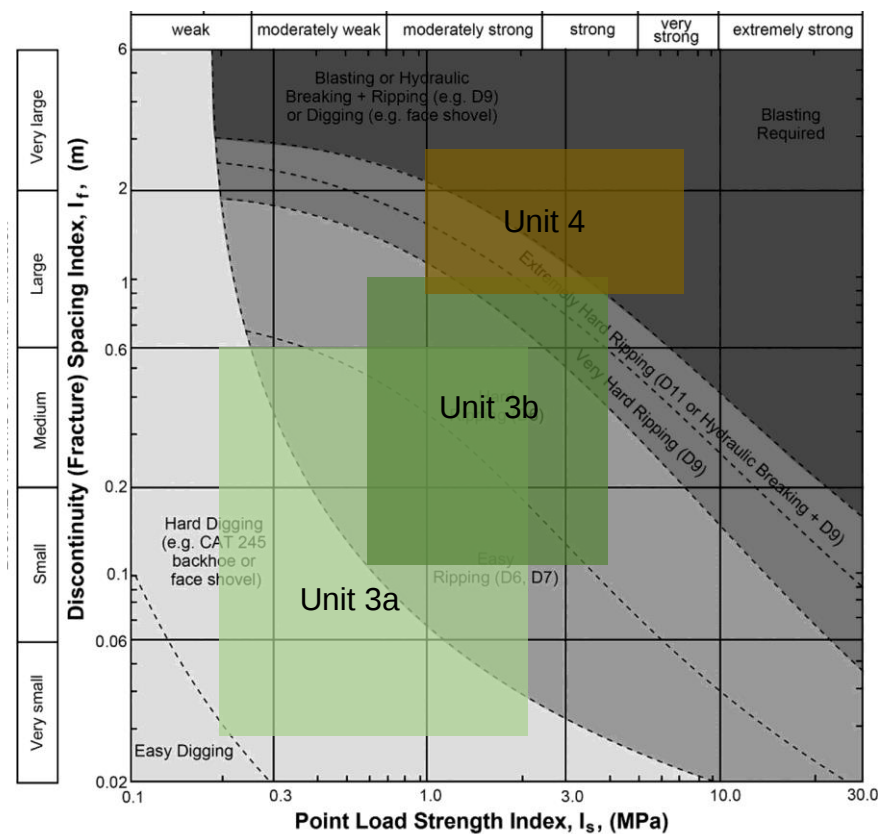


Figure 29: Excavatability of ground units

9.6 Impact on Surrounding Structures and Infrastructure

9.6.1 Ground Movement

There are existing buildings or roads on most sides of the proposed basement excavation. As such, the impacts of excavation on existing buildings, roads and services will need to be assessed. It is likely that a relatively stiff, i.e. anchored retention technique will be required to control ground movements.

Note that the top of base slab for the adjacent basement located at the north-west of the site is approximate at RL16.7, expected to be founded on Unit 3b, medium to high strength Laminite. We understand that the Project Structural Engineer is reviewing the as-built drawing of the adjacent basement (i.e. load transfer, footing plan etc). Mapping of the rockface will be required as excavation proceeds and application of shotcrete and/or spot rock bolting below existing building footings may be required to support the existing footings.

We recommend that dilapidation surveys are completed on adjacent buildings and infrastructure that may be affected by the excavation works. It should be undertaken before the commencement of excavation in order to allow assessment of damage due to excavation if any.

9.6.2 Groundwater Level Drawdown

Based on the groundwater monitoring results, the bulk excavation is expected to lie approximately 7 m below the existing groundwater table. Further groundwater drawdown analysis in the permanent condition can be carried out for a drained basement upon confirmation from Built.

9.6.3 Vibration

Adjacent buildings that are founded on sandstone can be highly susceptible to damage from vibrations when rock excavations are made in the immediate vicinity. The use of impact-based devices such as hydraulic impact breakers or rock hammers may generate vibrations that adversely impact the adjacent temporary

shoring structures and existing buildings. The amount of acceptable vibration will be dependent on several aspects such as the type of building structure, current structure condition and vibration frequencies of the excavating plant relative to the natural frequencies of the affected structure. The use of rock saws may help to reduce this risk and may also have the benefit of reducing overbreak during excavation works.

9.7 Monitoring Regime

Prior to and during excavation works, a monitoring regime should be in operation. This monitoring should include movement trigger levels, based on predicted movements of retention systems, which allow unexpected behaviour to be identified and addressed.

We anticipate that monitoring during excavation for this site could include the following:

- Three-dimensional survey targets/monitoring points.
- Settlement monitoring points on adjacent buildings and roads.
- Groundwater monitoring wells.
- Vibration monitoring.

9.8 Foundation Options

We anticipate the foundation for the proposed structure will generally comprise of pad footings, resting on / in Unit 4 (high to very high strength sandstone).

The borehole investigations were terminated close to bulk excavation level, up to 3 m below the bulk excavation level. Bands of siltstone were encountered in most of the boreholes (except BH306) which may require further assessment, depending on the bearing capacity required for footings.

All footings should be inspected by a geotechnical engineer prior to pouring concrete or installing steel reinforcement, to verify the actual ground conditions against the proposed design parameters.

The geotechnical reduction factor to be applied to the ultimate capacities will depend on the foundation type, structural redundancy and level of testing, in accordance with AS2159 – 2009.

9.9 Indicative Waste Classification

Laboratory analytical results of soil samples collected as part of this investigation were screened against values published in the NSW EPA *Waste Classification Guidelines Part 1: Classifying waste* (EPA, 2014). The exceedances of CT1 (General Solid Waste (GSW)) and CT2 (Restricted Solid Waste) values as shown in Table 12 were noted.

Table 12: Exceedances of CT1 Waste Classification Criteria

Sample ID_Depth	Constituent/Concentration	Criteria Exceeded/Concentration
BH301_0.15	Lead – 285 mg/kg	CT1 – 100 mg/kg
BH306_0.5	Lead - 205mg/kg	CT1 – 100 mg/kg
BH306_0.5	Copper – 76 mg/kg	CT1 – 40 mg/kg
BH404_0.1	Copper – 44 mg/kg	CT1 – 40 mg/kg
BH404_0.5	Copper - 217	CT1 – 100 mg/kg

Sample ID_Depth	Constituent/Concentration	Criteria Exceeded/Concentration
BH305_0.4	Benzo(a)pyrene – 17.5 mg/kg	CT2 – 3.2 mg/kg

Samples BH301_0.15 and BH305_0.4 were analysed against the Toxicity Characteristic Leaching Procedure (TCLP) which returned the following results shown in Table 13.

Table 13: Summary of TCLP Results

Sample ID_depth	Constituent/TCLP Concentration	CT1 or CT2 TCLP Criteria Exceeded
BH301_0.15	Lead - 2800	Nil
BH305_0.4	Benzo(a)pyrene - <0.5	Nil

Asbestos was positively identified in borehole BH306 which is consistent with previous investigations conducted by Douglas Partners that identified asbestos in test pits proximal to BH306. Material from this area should be excavated under an appropriate Asbestos Management Plan.

Based on results of the soil samples collected, the fill layer (i.e. Unit 1) can be indicatively be classified as General Solid Waste. Soils excavated from the vicinity of BH306 should be treated as 'Special Waste' due to the presence of asbestos or asbestos containing material (ACM). Additional sampling would be required to demonstrate that the occurrence of the ACM is not widespread. If such sampling and analysis was not successful in demonstrating that the extent of the Special Waste is limited to near BH306, larger volumes of the material may be classified as 'Special Waste', which is generally more expensive to dispose of off-site. Additional samples would also be required to meet sample density requirements for material removed from the site for disposal. The detection of petroleum hydrocarbons in groundwater samples collected from BH304 warrants further assessment as it may impact the ability to classify some of the excavated material as Virgin Excavated Natural Material (VENM). Laboratory analytical reports for waste classification samples are provided in APPENDIX D-1. Waste classification analytical results are summarised in a table and is attached in APPENDIX D-2.

The two contamination reports prepared in May 2017 (identified in Section 2.0) provide some information on the soil and groundwater quality beneath the site as follows:

- Douglas Partners (DP 2017a) sampled and analysed groundwater quality in monitoring wells at BH1 and BH2, located in the northern site boundary. It is reported the contaminants such as BTEX, TRH, VOC, PAH, OCP, PCB and phenols were below laboratory reporting limits.
- Chloroform, bromodichloromethane and per- and poly-fluoroalkyl substances (PFAS) were detected at low concentrations in BH2. Chloroform and bromodichloromethane were both rationalised as being associated with the use of water during coring. It is understood that this borehole was located near to a former fire station, which is consistent with the detections of these compounds, which are used in fire-fighting foams.
- The concentration of heavy metals was reported to be below the groundwater investigation level adopted by Douglas Partners (DP 2017a).

Similarly, contaminants such as BTEX, TRH, VOC, PFAS, OCP, PCB, phenols and cadmium measured in soil samples were reported to be below the laboratory reporting limits.

- Low levels of heavy metals were reported. Two samples recorded elevated nickel and lead concentrations which were above the respective GSW threshold concentrations.
- TCLP results indicated low leaching potential for these metals.
- The fill from the samples was reported to be within the criteria for GSW.

9.10 Additional Investigation

The proposed design parameters are based on the understanding of a typical retention system and foundation. We have carried out some finite element analysis (ref.: 19125312-002-L-Rev0) at the request of Built. Further assessment could be undertaken to confirm the design approach is consistent with the context of the proposed design parameters.

We envisage more groundwater quality tests may be required to support the application in order to discharge the collected groundwater into the stormwater system or sewer. Groundwater monitoring wells beyond the excavation boundary may be required (depending on the requirement from the council) to monitor the groundwater level during excavation. For basement other than tanked, permanent monitoring wells beyond the excavation boundary may be required for long term monitoring. Additional permeability tests and a numerical assessment would need to be undertaken to provide a better estimate of groundwater inflow rates.

Laboratory analytical results of soil and groundwater samples did not indicate evidence of gross contamination warranting additional investigation. Upon confirmation from Built, a site wide assessment (all four wells) for PFAS can be undertaken to re-evaluate the concentrations detected in groundwater at BH304 and the distribution as it may impact waste classification of the surrounding rock.

Additional waste classification samples are recommended to adequately classify the volume of soil anticipated to be excavated as part of the site's redevelopment. These investigations would provide information to assess cost implications for waste management at the site. The amount of investigation required after the demolition of existing buildings would depend on the scope of the overall site development.

10.0 LIMITATIONS

Your attention is drawn to the document “Limitations”, which is attached to APPENDIX G 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.

Signature Page

Golder Associates Pty Ltd



Eric Woon
Senior Geotechnical Engineer



Les McQueen
Principal

EW/LM/ew

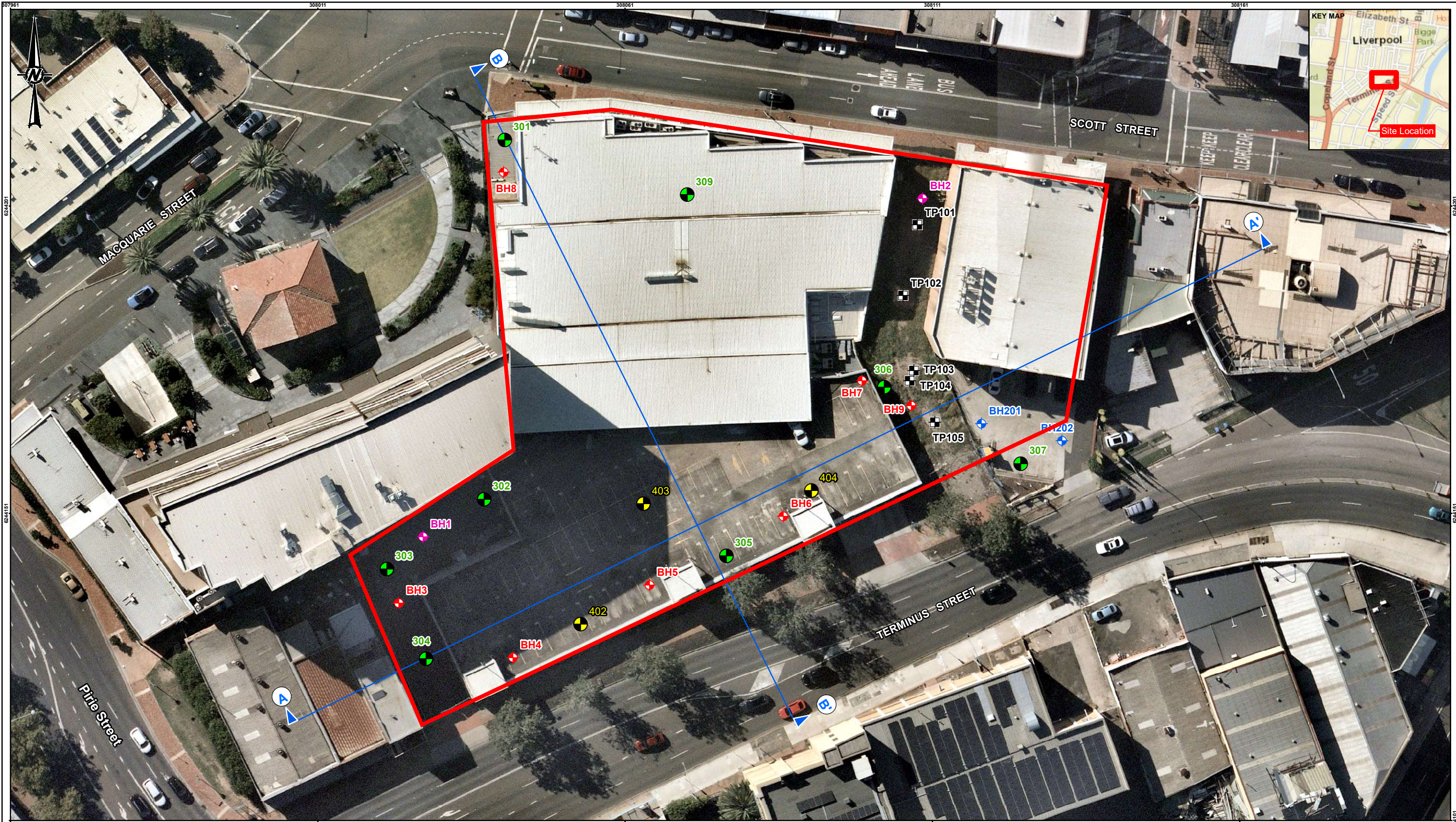
A.B.N. 64 006 107 857

Golder and the G logo are trademarks of Golder Associates Corporation

[https://golderassociates.sharepoint.com/sites/112254/project files/6 deliverables/001-r-gir and eir/19125312-001-r-rev2 geotechnical and environmental investigation report.docx](https://golderassociates.sharepoint.com/sites/112254/project%20files/6%20deliverables/001-r-gir%20and%20eir/19125312-001-r-rev2%20geotechnical%20and%20environmental%20investigation%20report.docx)

APPENDIX A

Investigation Layout Plan



LEGEND

- Shallow soil bore (Douglas Partners, 2017)
- Contamination bore (Douglas Partners, 2019)
- Deeper cored bore with groundwater well installed (Douglas Partners, 2017)
- Contamination test pits (Douglas Partners, 2019)
- Golder auger holes
- Golder boreholes
- Site boundary (indicative)
- Geotechnical Cross Sections



CLIENT		
BUILT DEVELOPMENT GROUP PTY LTD		
CONSULTANT		
DD-MM-YYYY	28-NOV-19	
DESIGNED	HPB	
PREPARED	HPB	
REVIEWED	EW	
APPROVED	EW	

NOTE(S)

1. COORDINATE SYSTEM: GDA 1994 MGA ZONE 56
2. TEST LOCATIONS ARE APPROXIMATE ONLY AND ARE SHOWN WITH REFERENCE TO EXISTING FEATURES.

REFERENCE(S)

SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
NEARMAP: CAPTURED 7TH APRIL 2019

PROJECT
LIVERPOOL CIVIC PLACE
52 SCOTT ST, LIVERPOOL

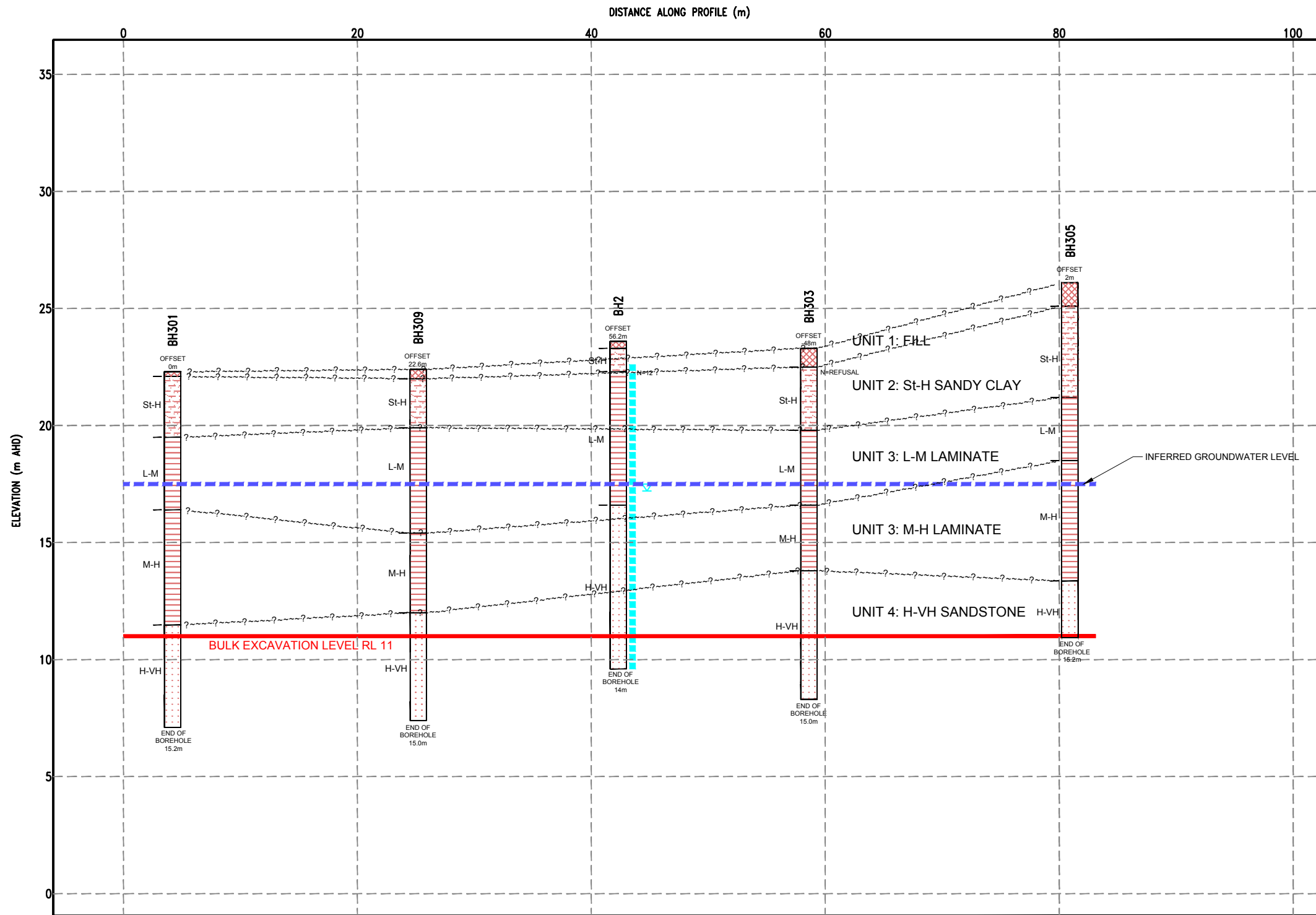
TITLE
INVESTIGATION LAYOUT PLAN

PROJECT NO.	CONTROL	REV.	FIGURE
19125312	001	0	1

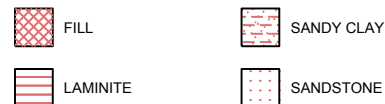
PATH: V:\BuiltDevelopment\Liverpool Civic Place\GIS\Project\19125312\001-M-F-001-Rev0-Investigation-Layout.mxd PRINTED ON: 2019-11-28 AT: 8:34:57 AM

IF THIS MEASUREMENT DOES NOT MATCH AS SHOWN, THE OTHER SIZE HAS BEEN MODIFIED PROPORTIONALLY

Path: \\golder-gdp\gdp\Survey\Geomatics\Liverpool Civic Place\19125312_LIVERPOOL CIVIC PLACE\02_PRODUCT\DWG\1 | File Name: 19125312-001-19-0002 B.dwg | Last Edited By: ewcon Date: 2019-08-21 Time: 2:58:46 PM | Printed By: jafan Date: 2019-08-21 Time: 3:00:36 PM



LEGEND



GROUNDWATER LEVEL

EXTENT OF SCREEN IN GROUNDWATER MONITORING WELL

N - STANDARD PENETRATION TEST VALUE

ROCK STRENGTH

EL - EXTREMELY LOW
VL - VERY LOW
L - LOW
M - MEDIUM
H - HIGH
VH - VERY HIGH

NOTE(S)

- SUBSURFACE CONDITIONS ARE ACCURATE AT THE BOREHOLE LOCATION ONLY AND VARIATIONS MAY OCCUR AWAY FROM THE BOREHOLE LOCATION.
- STRATA LAYERS AND ROCK CLASSIFICATION SHOWN IS GENERALISED AND EACH LAYER CAN INCLUDE BANDS OF LESS OR MORE FRACTURED ROCK.
- BOREHOLE STRIPS SHOWN HAS BEEN SIMPLIFIED AND SHOULD BE READ IN CONJUNCTION WITH DETAILED LOGS.

SOIL CONSISTENCY

St - STIFF
Vst - VERY STIFF
H - HARD

CLIENT
BUILT DEVELOPMENT GROUP PTY LTD

CONSULTANT



YYYY-MM-DD	2019-08-08
DESIGNED	EW
PREPARED	JF
REVIEWED	EW
APPROVED	EW

PROJECT
LIVERPOOL CIVIC PLACE
52 SCOTT ST, LIVERPOOL

TITLE
SECTION B-B

PROJECT NO.	CONTROL	REV.	FIGURE
19125312	001	0	3

25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3

APPENDIX B

Borehole Logs and Explanatory Notes



DRILLING/EXCAVATION METHOD

ADH	Hollow auger drilling	EX	Excavator	PQ3	Diamond core - 83 mm
ADT	Auger drilling with tc-bit	HA	Hand auger	PT	Push tube sampling
ADV	Auger drilling with v-bit	HAND	Excavated by hand methods	RAB	Rotary air blast
AIRCORE	Aircore	HMLC	Diamond core - 63 mm	RC	Reverse circulation
AT	Air track	HQ3	Diamond core - 61 mm	RT	Rock roller
BH	Backhoe bucket	JET	Jetting	SONIC	Sonic drilling
CT	Cable tool rig	MZ	Mazier tube sampling	SPT	Standard penetration testing
DTC	Diatube coring	NDD	Non-destructive digging	U	Undisturbed tube sampling
EE	Existing excavation	NMLC	Diamond core - 52 mm	WB	Washbore drilling
EPT	Extruded push tube	NQ3	Diamond core - 45 mm		

PENETRATION/EXCAVATION RESISTANCE

L	Low resistance. Rapid penetration possible with little effort from the equipment used.
M	Medium resistance. Excavation/possible at an acceptable rate with moderate effort from the equipment used.
H	High resistance to penetration/excavation. Further penetration is possible at a slow rate and requires significant effort from the equipment.
R	Refusal or Practical Refusal. No further progress possible without the risk of damage or unacceptable wear to the digging implement or machine.
These assessments are subjective and are dependent on many factors including the equipment power, weight, condition of excavation or drilling tools, and the experience of the operator.	

WATER

	Water level at date shown		Partial water loss
	Water inflow		Complete water loss
GROUNDWATER NOT OBSERVED	The observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave in of the borehole/test pit.		
GROUNDWATER NOT ENCOUNTERED	The borehole/test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/test pit been left open for a longer period.		

SAMPLING AND TESTING

SPT	Standard Penetration Test to AS1289.6.3.1-2004
4,7,11 N=18	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following 150mm seating
30/80 mm	Where practical refusal occurs, the blows and penetration for that interval are reported
RW	Penetration occurred under the rod weight only
HW	Penetration occurred under the hammer and rod weight only
HB	Hammer double bouncing on anvil
DS	Disturbed sample
BDS	Bulk disturbed sample
G	Gas Sample
W	Water Sample
FP	Field permeability test over section noted
FV	Field vane shear test expressed as uncorrected shear strength (sv = peak value, sr = residual value)
PID	Photoionisation Detector reading in ppm
PM	Pressuremeter test over section noted
PP	Pocket penetrometer test expressed as instrument reading in kPa
U63	Thin walled tube sample - number indicates nominal sample diameter in millimetres
WPT	Water pressure test
DCP	Dynamic cone penetration test
CPT	Cone penetration test
CPTu	Cone penetration test with pore pressure (u) measurement

RANKING OF VISUALLY OBSERVABLE CONTAMINATION AND ODOUR (for specific soil contamination assessment projects)

R = 0	No visible evidence of contamination	R = A	No non-natural odours identified
R = 1	Slight evidence of visible contamination	R = B	Slight non-natural odours identified
R = 2	Visible contamination	R = C	Moderate non-natural odours identified
R = 3	Significant visible contamination	R = D	Strong non-natural odours identified

ROCK CORE RECOVERY

TCR = Total Core Recovery (%)	RQD = Rock Quality Designation (%)	SCR = Solid Core Recovery (%)	F = Fracture Frequency
$= \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$	$= \frac{\sum \text{Axial lengths of core} > 100 \text{ mm}}{\text{Length of core run}} \times 100$	$= \frac{\sum \text{Length of cylindrical core recovered}}{\text{Length of core run}} \times 100$	$= \frac{\text{No. of defects}}{\text{Length of zone (m)}}$



SYMBOLS

	FILL		CLAY (CL, CI or CH)
	GRAVEL (GW, GP, GM or GC)		ORGANIC SOILS (OL, OH or Pt)
	SAND (SW, SP, SM or SC)		COBBLES or BOULDERS
	SILT (ML or MH)		

Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay.

CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil and Rock is classified and described in Reports of Boreholes and Test Pits using the preferred method given in AS1726-2017. The material properties are assessed in the field by visual/tactile methods.

Particle Size			Plasticity Properties
Soil Group	Sub Division	Particle Size	
BOULDERS		> 200 mm	
COBBLES		63 to 200 mm	
GRAVEL	Coarse	19 to 63 mm	
	Medium	6.7 to 19 mm	
	Fine	2.36 to 6.7 mm	
SAND	Coarse	0.6 to 2.36 mm	
	Medium	0.21 to 0.6 mm	
	Fine	0.075 to 0.21 mm	
SILT		0.002 to 0.075 mm	
CLAY		< 0.002 mm	

MOISTURE CONDITION

Symbol	Term	Description
D	Dry	Sands and gravels are free flowing. Clays and silts may be brittle or friable and powdery.
M	Moist	Soils are darker than in dry condition and may feel cool. Sands and gravels tend to cohere.
W	Wet	Soils exude free water. Sand and gravels tend to cohere.

Moisture condition for fine grained soils is described relative to the plastic limit or liquid limit as specified in AS1726-2017.

CONSISTENCY AND DENSITY

Fine Grained Soils			Coarse Grained Soils		
Symbol	Term	Undrained Shear Strength	Symbol	Term	Density Index (%)
VS	Very Soft	0 to 12 kPa	VL	Very Loose	Less than 15
S	Soft	12 to 25 kPa	L	Loose	15 to 35
F	Firm	25 to 50 kPa	MD	Medium Dense	35 to 65
St	Stiff	50 to 100 kPa	D	Dense	65 to 85
VSt	Very Stiff	100 to 200 kPa	VD	Very Dense	Above 85
H	Hard	Above 200 kPa			
Fr	Friable	-			

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material.

* SPT correlations are not stated in AS1726-2017, and may be subject to corrections for overburden pressure and equipment type.

CEMENTATION

Weakly Cemented	The soil may be easily disaggregated by hand in air or water.
Moderately Cemented	Effort is required to disaggregate the soil by hand in air or water.



GOLDER

TERMS FOR ROCK MATERIAL STRENGTH & WEATHERING AND ABBREVIATIONS FOR DEFECT DESCRIPTIONS

STRENGTH

Symbol	Term	UCS (MPa)	Field Guide
VL	Very Low	0.6 to 2	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30 mm can be broken by finger pressure.
L	Low	2 to 6	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
M	Medium	6 to 20	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
H	High	20 to 60	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken with pick with a single firm blow; rock rings under hammer.
VH	Very High	60 to 200	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
EH	Extremely High	>200	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Material with strength less than 'Very Low' shall be described using soil characteristics. The presence of an original rock structure, fabric or texture should be noted, if relevant.

ROCK MATERIAL WEATHERING

ROCK MATERIAL WEATHERING			Field Guide
Symbol	Term		
RS	Residual Soil		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
XW	Extremely Weathered		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
DW	HW	Highly Weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
	MW	Moderately Weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable, but shows little or no change of strength from fresh rock.
SW	Slightly Weathered		Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
FR	Fresh		Rock shows no sign of decomposition of individual minerals or colour changes.

ABBREVIATIONS FOR DEFECT TYPES AND DESCRIPTIONS

Defect Type	Coating or Infilling	Roughness
P Parting	Cn Clean	VRo Very Rough
X Foliation	Sn Stain	Ro Rough
L Cleavage	Ve Veneer	Sm Smooth
C Contact	Ct Coating	Po Polished
J Joint	In Infill	Sl Slickensided
SSu Sheared Surface	Planarity Pl Planar Cv Curved Un Undulating St Stepped Ir Irregular	Vertical Boreholes – The dip (inclination from horizontal) of the defect is given. Inclined Boreholes – The inclination is measured as the acute angle between the core axis and the vertical direction.
SS Sheared Seam		
SZ Sheared Zone		
CS Crushed Seam		
IS Infilled Seam		
EWS Extremely Weathered Seam		
V Vein		



GOLDER

REPORT OF BOREHOLE: BH301

SHEET: 1 OF 5

DRILL RIG: Kamutsu

CONTRACTOR: Nealings Drilling

LOGGED: RAM DATE: 24/7/19

CHECKED: BJF DATE: 31/7/19

CLIENT: Built

COORDS: 308040 m E 6244214 m N MGA94 56

PROJECT: Proposed Mixed Development

SURFACE RL: 22.30 m DATUM: AHD

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

JOB NO: 19125312

HOLE DEPTH: 15.20 m

Drilling					Sampling		Field Material Description																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
CC	H		0.0	22.30	BH301/0.15E 0.15 m 1xJar, 1xPFAS, 1xAsb R = 1A PP 0.30 m =125 kPa PP 0.40 m =150 kPa			GC	CONCRETE				0.13 - 0.20 m; trace fragments of brick up to 30mm in size																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
			0.13	0.13																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
			0.20	0.20									CH	FILL: Clayey GRAVEL fine to coarse grained, sub-angular, brown, low plasticity clay, with fine to coarse grained sand	M		RESIDUAL SOIL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
			22.10	22.10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
			0.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F01a
RL3



REPORT OF BOREHOLE: BH301

DRILL RIG: Kamutsu

CONTRACTOR: Nealings Drilling

LOGGED: RAM DATE: 24/7/19

CHECKED: BJF DATE: 31/7/19

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308040 m E 6244214 m N MGA94 56
SURFACE RL: 22.30 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.20 m

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)		
				0.0					VL 0.8 VL 3.0 L 3.0 L 4.0 H 20 H 40 VH 60 VH 200 EH			10 30 100 300 1000 3000		
				0.5										
				1.0										
				1.5										
				2.0										
				2.5										
				2.80										
				2.80			Continuation of Sheet 1							
				19.46			Core loss LAMINITE fine to medium grained, orange brown and grey, with irregular and indistinct silty laminations at 0° to 5°	XW HW			2.84-2.90 m: EWS, clay 2.93 m: J, 30°, Pl, Sm, Cn 3.12 m: B, 0-5°, Pl, Sm, clay Ve 3.18 m: B, 0-5°, Pl, Sm, clay Ve 3.22 m: B, 0-5°, Pl, Sm, clay Ve 3.33 m: B, 0-5°, Pl, Sm, clay Ve 3.52 m: B, 0-5°, Pl, Sm, clay Ve 3.68-3.72 m: Jx2, 30°, sp = 40 mm, Pl, Sm, Cn 3.78-3.83 m: EWS, gravelley clay 3.99 m: B, 0-5°, Pl, Sm, clay Ve 4.18-4.23 m: EWS, clay 4.71 m: B, 0-5°, Pl, Sm, clay Ve			
				3.45			fine grained, dark red brown to grey black, indistinctly laminated at 0° to 5°	XW HW						
				18.85				XW HW						
				4.0				XW HW						
				4.5				XW HW						
				5.0										

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3

GAP 8_16.7 LIB.GLB Log GAP CORED BOREHOLE 19125312.GPJ <DrawingFile>> 12-08-2019 17:26 8.30.004 Datgel Tools



GOLDER

REPORT OF BOREHOLE: BH301

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308040 m E 6244214 m N MGA94 56
SURFACE RL: 22.30 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.20 m

SHEET: 3 OF 5
DRILL RIG: Kamutsu
CONTRACTOR: Nealings Drilling
LOGGED: RAM DATE: 24/7/19
CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information		
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
								VL 0.8 L 2.0 M 6.0 H 20 VH 60 EH 200				10 20 50 100 300 1000 3000
NMLC	95% RETURN		100	85 (90)	5.0		LAMINITE fine to medium grained, orange brown and grey, with irregular and indistinct silty laminations at 0° to 5°	HW		PLI(D)=0.23 PLI(A)=0.39	5.23 m: B, 0-5°, Pl, Sm, clay Ve 5.29-5.33 m: EWS, clay	
					5.3			XW				
					5.5			MW				
					5.83			HW				
					5.97							
					6.0		with lenses of sandstone					
					6.38		fine to medium grained, grey and orange brown, with irregular and indistinct silty laminations at 0° to 5°				5.95 m: B, 0-5°, Pl, Sm, clay Ve	
	95% RETURN		100	90 (95)	6.5					PLI(D)=0.22 PLI(A)=0.75		
					6.88							
					7.0		fine grained, dark grey to black and orange brown, indistinctly laminated at 0° to 5°				6.99 m: B, 0-5°, Pl, Sm, clay Ve	
					7.20							
					7.54		dark grey to black	MW			7.23-7.27 m: EWS, clay	
NMLC	95% RETURN		100	75 (95)	7.5		with irregular and indistinct silty laminations at 0° to 5°	XW		PLI(D)=0.86 PLI(A)=1.98	7.32 m: B, 0-5°, Pl, Sm, clay Ve 7.35 m: B, 0-5°, Pl, Sm, clay Ve	
					7.71			MW				
					8.01		fine grained, dark grey to black, indistinctly laminated at 0° to 5°				8.14 m: B, 0-5°, Pl, Sm, clay Ve 8.22 m: B, 0-5°, Pl, Sm, clay Ve	
					8.43						8.38 m: B, 0-5°, Pl, Sm, clay Ve	
					8.58		with lenses of sandstone			PLI(D)=0.61 PLI(A)=0.79		
					8.71		fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°				8.76 m: B, 0-5°, Pl, Sm, Cn	
	95% RETURN		100	85 (90)	9.0					PLI(D)=0.77 PLI(A)=2.00		
					9.58							
					9.72		fine grained, dark grey to black, indistinctly laminated at 0° to 5°				9.69 m: B, 0-5°, Pl, Sm, clay Ve 9.74 m: B, 0-5°, Pl, Sm, clay Ve	
					10.0							

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH301

SHEET: 4 OF 5

DRILL RIG: Kamutsu

CONTRACTOR: Nealings Drilling

LOGGED: RAM DATE: 24/7/19

CHECKED: BJF DATE: 31/7/19

CLIENT: Built

COORDS: 308040 m E 6244214 m N MGA94 56

PROJECT: Proposed Mixed Development

SURFACE RL: 22.30 m DATUM: AHD

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

JOB NO: 19125312

HOLE DEPTH: 15.20 m

Drilling					Field Material Description					Defect Information		
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
NMLC	95% RETURN	100	85 (90)	10.0			LAMINITE fine to medium grained, orange brown and grey, with irregular and indistinct silty laminations at 0° to 5°	MW			10.04 m: B, 0-5°, Pl, Sm, clay Ve 10.09 m: B, 0-5°, Pl, Sm, clay Ve	
				10.5							10.26 m: B, 0-5°, Pl, Sm, clay Ve 10.29 m: B, 0-5°, Pl, Sm, clay Ve 10.39 m: J, 30°, Pl, Sm, Cn 10.41 m: B, 0-5°, Pl, Sm, clay Ve 10.46 m: B, 0-5°, Pl, Sm, clay Ve 10.51 m: B, 0-5°, Pl, Sm, clay Ve	
				10.62								
				11.68			with lenses of sandstone			PLI(D)=0.33 PLI(A)=0.45		
				10.82								
				11.48			SANDSTONE fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°	FR - MW		UCS=22.0		
				11.5								
				12.0						PLI(D)=3.55 PLI(A)=6.96		
				12.29								
				10.01			SILTSTONE fine grained, dark grey to black, indistinctly laminated at 0° to 5°					
NMLC	95% RETURN	100	100 (100)	12.43								
				9.87			SANDSTONE fine to medium grained, massive, grey					
				12.58			with lenses of siltstone			PLI(D)=0.77 PLI(A)=1.57		
				9.72			massive					
				9.68								
				12.91			with irregular and indistinct silty laminations at 0° to 5°				12.94 m: B, 0-5°, Pl, Sm, clay Ve	
				9.39								
				13.20			with lenses of siltstone					
				13.27			SILTSTONE fine grained, dark grey to black, indistinctly laminated at 0° to 5°			PLI(D)=3.53 PLI(A)=6.42		
				9.03			with lenses of sandstone					
NMLC	95% RETURN	100	100 (100)	13.45			indistinctly laminated at 0° to 5°					
				8.85								
				13.59								
				8.71								
				13.80			SANDSTONE fine to medium grained, dark grey to grey, with irregular and indistinct silty laminations at 0° to 5°			PLI(D)=0.44 PLI(A)=0.75		
				8.50								
				14.0								
				14.5								
				15.0								

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH301

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308040 m E 6244214 m N MGA94 56
SURFACE RL: 22.30 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.20 m

SHEET: 5 OF 5
DRILL RIG: Kamutsu
CONTRACTOR: Nealings Drilling
LOGGED: RAM DATE: 24/7/19
CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description						Defect Information																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa					LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
NMLC									VL	SL	L	M	H	VH	EH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				</

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



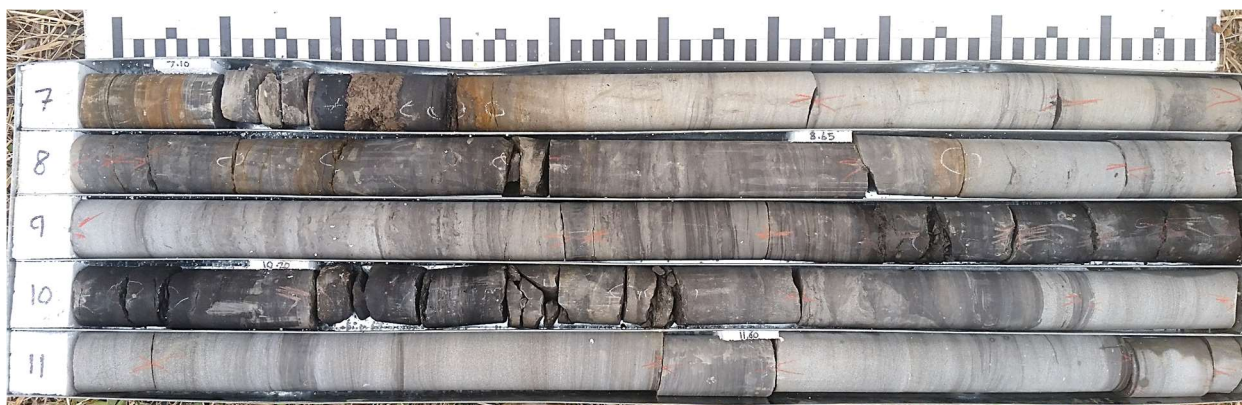
GOLDER

REPORT OF CORE PHOTOGRAPHS: BH301

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308040 m E 6244214 m N MGA94 56
SURFACE RL: 22.30 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.20 m

SHEET: 1 OF 1
DRILL RIG: Kamatsu
CONTRACTOR: Nealings Drilling
LOGGED: RAM DATE: 24/7/19
CHECKED: BJF DATE: 31/7/19



This report of core photographs must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F28
RL1



GOLDER

REPORT OF BOREHOLE: BH302

SHEET: 1 OF 5

CLIENT: Built

COORDS: 308031 m E 6244139 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 22.30 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 16/7/19

JOB NO: 19125312

HOLE DEPTH: 15.20 m

CHECKED: BJF DATE: 31/7/19

Drilling				Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M-H	GNE	0.0	0.06				GP	ASPHALT					0.06 - 0.25 m; inferred base course
			0.06	22.24					FILL: Sandy GRAVEL fine to coarse grained, blue grey, fine to coarse grained sand		D			
H			0.25	22.05	SPT01 1.00-1.07 m SPT 1.00-1.07 m 25/70mm HB N=R			CI	Sandy CLAY medium plasticity, grey brown, fine to coarse grained sand, trace fine to coarse grained, sub-angular, siltstone gravel					RESIDUAL SOIL
			0.5							w < PL	H			
For Continuation Refer to Sheet 2														
			1.5											
			2.0											
			2.5											
			3.0											
			3.5											
			4.0											
			4.5											
			5.0											

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: BH302

SHEET: 2 OF 5

CLIENT: Built

COORDS: 308031 m E 6244139 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 22.30 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 16/7/19

JOB NO: 19125312

HOLE DEPTH: 15.20 m

CHECKED: BJF DATE: 31/7/19

Drilling						Field Material Description						Defect Information			
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)		DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)		
				0.0											
				0.5											
				1.0											
				1.35											
				20.95											
				1.5			Continuation of Sheet 1								
				1.5			LAMINITE fine grained, grey black and red brown, indistinctly laminated at 0° to 5°	HW		PLI(D)=0.63 PLI(A)=0.96		1.40 m: J, 30°, Pl, Sm, Cn 1.64 m: B, 0-5°, Pl, Sm, clay Ve 1.69 m: B, 0-5°, Pl, Sm, clay Ve			
				2.0				XW HW				1.89-1.91 m: EWS, clayey gravel			
				2.5				XW HW		PLI(D)=0.09 PLI(A)=0.09		2.23-2.27 m: EWS, clay			
				3.0				XW HW				2.93 m: J, 30°, Pl, Sm, Cn			
				3.5						PLI(D)=0.49 PLI(A)=0.40		3.23 m: J, 30°, Cv, Sm, Cn			
				4.0				XW HW XW HW XW HW				3.71 m: B, 0-5°, Pl, Sm, clay Ve 3.84-3.93 m: EWS, gravelley clay 3.95-4.02 m: EWS, gravelley clay			
				4.27				XW HW		PLI(D)=0.45 PLI(A)=0.59		4.07 m: B, 0-5°, Pl, Sm, clay Ve 4.09 m: B, 0-5°, Pl, Sm, clay Ve 4.11-4.17 m: EWS, sandy clay			
				18.03			fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°	HW MW HW				4.27 m: J, 0-5°, Un, Sm, Cn 4.41 m: B, 0-5°, Pl, Sm, clay Ve 4.61 m: B, 0-5°, Pl, Sm, clay Ve 4.82 m: B, 0-5°, Pl, Sm, clay Ve			
				5.0											

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH302

SHEET: 3 OF 5

CLIENT: Built

COORDS: 308031 m E 6244139 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 22.30 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 16/7/19

JOB NO: 19125312

HOLE DEPTH: 15.20 m

CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations		AVERAGE DEFECT SPACING (mm)	
NMLC	75% RETURN	100	70 (70)	5.0			LAMINITE fine grained, grey black and red brown, indistinctly laminated at 0° to 5°	MW - HW			4.99 m: B, 0-5°, Pl, Sm, clay Ve 5.05 m: B, 0-5°, Pl, Sm, clay Ve 5.16 m: B, 0-5°, Pl, Sm, clay Ve 5.27 m: EWS, clayey gravel 5.36-5.43 m: EWS, clay			
				5.5				XW MW - HW XW MW - HW		PLI(D)=0.60 PLI(A)=0.94	5.68 m: B, 0-5°, Pl, Sm, clay Ve 5.77 m: B, 0-5°, Pl, Sm, clay Ve			
				6.0										
				6.38 15.92			fine grained, dark grey to black, indistinctly laminated at 0° to 5°	XW MW - HW HW		PLI(D)=1.11 PLI(A)=1.76	6.29-6.31 m: EWS, clayey gravel 6.33 m: B, 0-5°, Pl, Sm, clay Ve 6.38 m: B, 0-5°, Pl, Sm, sandy clay Ve 6.41 m: B, 0-5°, Pl, Sm, sandy clay Ve 6.44 m: B, 0-5°, Pl, Sm, clay Ve 6.45 m: B, 0-5°, Pl, Sm, sandy clay Ve 6.68 m: B, 0-5°, Pl, Sm, clay Ve			
				6.93 15.37			with lenses of sandstone	XW HW			6.82 m: B, 0-5°, Pl, Sm, sandy clay Ve 6.88-6.91 m: EWS, clayey gravel 6.94 m: B, 0-5°, Pl, Sm, clayey gravel Ve			
				7.0										
				7.11 15.19 7.22 15.08			fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5° grey and orange brown	MW - HW HW			7.23 m: B, 0-5°, Pl, Sm, clay Ve 7.28 m: B, 0-5°, Pl, Sm, clay Ve 7.33 m: B, 0-5°, Pl, Sm, clay Ve 7.40-7.45 m: EWS, sandy clay 7.40 m: 7.40 m water loss			
				7.48 14.82			grey	XW HW MW - HW		PLI(D)=0.40 PLI(A)=1.18				
				7.88 14.42			fine grained, dark grey to black, indistinctly laminated at 0° to 5°	XW HW			7.88 m: B, 0-5°, Pl, Sm, clay Ve 7.93 m: B, 0-5°, Pl, Sm, clay Ve 7.98-8.02 m: EWS, clayey gravel			
				8.0										
	90% RETURN	100	90 (90)	8.25			CORE LOSS							
				8.35 13.95			LAMINITE fine grained, dark grey to black, indistinctly laminated at 0° to 5°	HW XW HW			8.38 m: B, 0-5°, Pl, Sm, clay Ve 8.40-8.50 m: EWS, gravelley clay 8.52-8.61 m: EWS, gravelley clay			
				8.62 13.68			with lenses of sandstone	XW MW - HW		PLI(D)=0.07 PLI(A)=0.55	8.74 m: B, 0-5°, Pl, Sm, clay Ve 8.90 m: B, 0-5°, Pl, Sm, clay Ve			
				9.00 13.30			SANDSTONE fine to medium grained, massive, grey	MW						
				9.49 12.81 9.63 12.67			with irregular and indistinct silty laminations at 0° to 5° massive			PLI(D)=4.24 PLI(A)=4.64				
				10.0										

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH302

SHEET: 4 OF 5

CLIENT: Built

COORDS: 308031 m E 6244139 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 22.30 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 16/7/19

JOB NO: 19125312

HOLE DEPTH: 15.20 m

CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information		
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
NMLC	90% RETURN		100	90 (90)	10.0		SANDSTONE fine to medium grained, massive, grey with irregular and indistinct silty laminations at 0° to 5°	MW				
					10.15							
					12.15							
					10.31							
					11.99		massive					
					10.5							
					10.70		with irregular and indistinct silty laminations at 0° to 5°			PLI(D)=2.30 PLI(A)=4.26	10.70 m: B, 0-5°, Pl, Sm, clayey gravel Ve	
					11.60							
					10.86		massive				10.83 m: B, 0-5°, Pl, Sm, clay gravel Ve	
					11.44							
					11.0							
					11.5							
NMLC	95% RETURN		100	95 (100)	11.52		SILTSTONE indistinctly laminated at 0° to 5°			PLI(D)=0.98 PLI(A)=1.88		
					10.78							
					11.63		SANDSTONE fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°					
					10.67							
					12.0							
					12.45							
					9.85		massive					
					12.68							
					9.62		SILTSTONE fine to medium grained, dark grey to black, indistinctly laminated at 0° to 5°			PLI(D)=0.38 PLI(A)=0.77	12.68 m: J, 0°, Pl, Sm, Cn	
					12.96							
					9.34		SANDSTONE fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°					
					13.28							
NMLC	95% RETURN		100	100 (100)	13.44		massive					
					9.02							
					13.64		with irregular and indistinct silty laminations at 0° to 5°			PLI(D)=0.72 PLI(A)=1.38		
					8.86							
					13.73		SILTSTONE fine grained, dark grey to black, indistinctly laminated at 0° to 5° with lenses of sandstone				13.73 m: B, 0-5°, Pl, Sm, clay Ve	
					8.66						13.80 m: B, 0-5°, Pl, Sm, clay Ve	
					14.0							
					14.5							
					14.55						14.55 m: B, 0-5°, Pl, Sm, clay Ve	
					14.70						14.70 m: B, 0-5°, Pl, Sm, clay Ve	
					15.0							

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH302

CLIENT: Built

COORDS: 308031 m E 6244139 m N MGA94 56 (hhGPS)

SHEET: 5 OF 5

PROJECT: Proposed Mixed Development

SURFACE RL: 22.30 m DATUM: AHD

DRILL RIG: Edson

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

CONTRACTOR: Nealings Drilling

JOB NO: 19125312

HOLE DEPTH: 15.20 m

LOGGED: RAM DATE: 16/7/19

CHECKED: BJF DATE: 31/7/19

Drilling						Field Material Description						Defect Information			
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)			
NMLC		100	100 (100)	15.0	15.20		SILTSTONE fine grained, dark grey to black, indistinctly laminated at 0° to 5° with lenses of sandstone	MW		PLI(D)=0.12 PLI(A)=1.45					
				7.10			END OF BOREHOLE @ 15.20 m TARGET DEPTH BACKFILLED								
				15.5											
				16.0											
				16.5											
				17.0											
				17.5											
				18.0											
				18.5											
				19.0											
				19.5											
				20.0											

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: BH302

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308031 m E 6244139 m N MGA94 56 (hhGPS)
SURFACE RL: 22.30 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.20 m

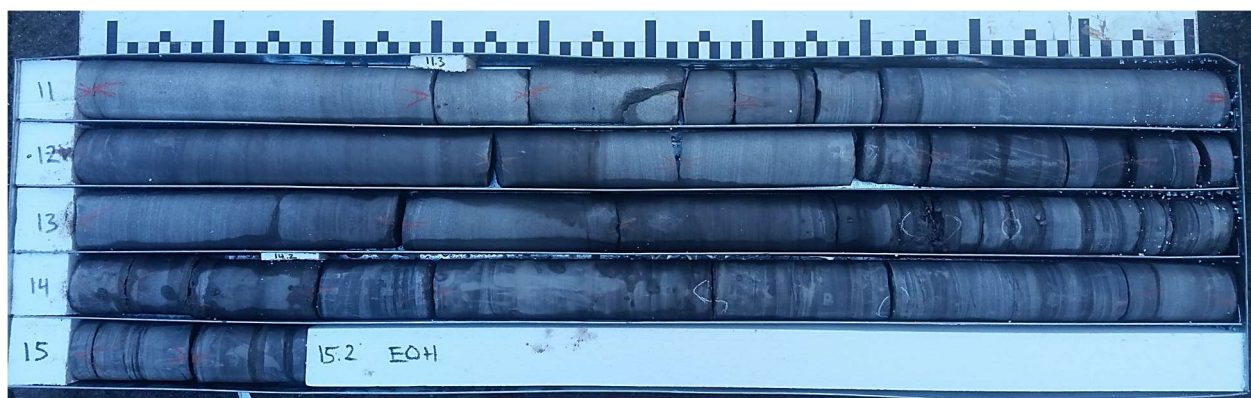
SHEET: 1 OF 1

DRILL RIG: Edson

CONTRACTOR: Nealings Drilling

LOGGED: RAM DATE: 16/7/19

CHECKED: BJF DATE: 31/7/19



This report of core photographs must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F28
RL1



GOLDER

REPORT OF BOREHOLE: BH303

SHEET: 1 OF 4

CLIENT: Built

COORDS: 308018 m E 6244149 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 23.30 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 15/7/19

JOB NO: 19125312

HOLE DEPTH: 15.00 m

CHECKED: BJF DATE: 31/7/19

Drilling				Sampling		Field Material Description										
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS				
ADT	M-H	GNE	0.0	23.27	BH303/0.2E 0.20 m 1xJar, 1xAsb, 1xPFAS R = 1A			GP	ASPHALT	D	w < PL	St	0.03 - 0.15 m; inferred base course			
				0.15				23.15	SC				FILL: Sandy GRAVEL fine to coarse grained, sub-angular, blue grey, fine to coarse grained sand	0.15 - 0.80 m; trace fragments of brick and tile up to 30mm in size		
	M			0.5				0.80	22.50				CH	CLAY high plasticity, red and grey, trace fine to coarse grained sand		RESIDUAL SOIL
				1.0				1.00	22.30				CL-CI	Sandy CLAY low to medium plasticity, orange brown and grey, fine grained sand, trace fine to coarse grained, sub-angular, siltstone gravel		1.0 - 1.5 m; extremely weathered siltstone
	H		1.5		PP 0.90 m =150 kPa											
			2.0		SPT01 1.00-1.16 m SPT 1.00-1.16 m 24, 5/10mm HB N>5											
			2.5													
			3.0													
			3.5													
			4.0													
			4.5													
			5.0													
									For Continuation Refer to Sheet 2							

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: BH303

CLIENT: Built

COORDS: 308018 m E 6244149 m N MGA94 56 (hhGPS)

SHEET: 2 OF 4

PROJECT: Proposed Mixed Development

SURFACE RL: 23.30 m DATUM: AHD

DRILL RIG: Edson

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

CONTRACTOR: Nealings Drilling

JOB NO: 19125312

HOLE DEPTH: 15.00 m

LOGGED: RAM

DATE: 15/7/19

CHECKED: BJF

DATE: 31/7/19

Drilling						Field Material Description						Defect Information	
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)	
				0.0									
				0.5									
				1.0									
				1.5									
				1.70			Continuation of Sheet 1						
				21.58			CORE LOSS LAMINITE fine grained, red brown to grey black, indistinctly laminated at 0° to 5°	HW		PLI(D)=0.58 PLI(A)=0.54			
				2.22			grey to black			PLI(D)=0.30 PLI(A)=0.72			
				2.48			red brown to grey black						
				2.5									
				3.0									
				3.46			grey to black						
				3.5									
				4.19			grey black to red brown						
				4.5									
				4.93			fine to medium grained, grey, with irregular and						
				5.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH303

SHEET: 3 OF 4

CLIENT: Built

COORDS: 308018 m E 6244149 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 23.30 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM

DATE: 15/7/19

JOB NO: 19125312

HOLE DEPTH: 15.00 m

CHECKED: BJF

DATE: 31/7/19

Drilling					Field Material Description					Defect Information		
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
NMLC	95% RETURN	100	95 (95)	5.0			indistinct silty laminations at 0° to 5° LAMINITE fine grained, red brown to grey black, indistinctly laminated at 0° to 5°	MW - HW		PLI(D)=0.07 PLI(A)=0.88	5.23 m: B, 0-5°, Pl, Sm, clay Ve 5.29 m: B, 0-5°, Pl, Sm, clay Ve 5.37 m: B, 0-5°, Pl, Sm, clay Ve 5.47 m: B, 0-5°, Pl, Sm, clay Ve	
				5.66	17.64		grey and orange brown	HW			5.66 m: B, 0-5°, Pl, Sm, clay Ve 5.68 m: B, 0-5°, Pl, Sm, clay Ve 5.81-5.85 m: EWS, gravelley clay	
				6.00	17.30		grey	XW HW			5.98-6.00 m: EWS, clay	
				6.66	16.64		fine to medium grained, massive			PLI(D)=0.81 PLI(A)=1.13		
	95% RETURN	100	90 (90)	7.10	16.20		fine grained, dark grey to black, indistinctly laminated at 0° to 5°	XW HW			7.16 m: B, 0-5°, Pl, Sm, clay Ve 7.19-7.23 m: EWS, clay	
				7.37				XW HW			7.37-7.40 m: EWS, clay 7.47-7.53 m: EWS, clay	
				7.90	15.40		fine to medium grained, massive, grey	XW HW		PLI(D)=0.17 PLI(A)=1.19	7.68-7.73 m: EWS, clay 7.85-7.87 m: EWS, clay	
				8.16	15.14		with irregular and indistinct silty laminations at 0° to 5°					
	95% RETURN	100	85 (85)	8.62	14.68		fine grained, grey to black, indistinctly laminated at 0° to 5°, with zones of fine grained sandstone	XW HW		PLI(D)=0.88 PLI(A)=1.41	8.69-8.83 m: EWS, clay 8.91-9.00 m: EWS, gravelley clay 9.02-9.08 m: EWS, gravelley clay	
				9.22				XW HW		PLI(D)=0.54 PLI(A)=0.55	9.22-9.33 m: EWS, gravelley clay	
				9.46	13.84		SANDSTONE fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°	MW - HW MW			9.90-9.96 m: EWS, gravelley clay	

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH303

SHEET: 4 OF 4

CLIENT: Built

COORDS: 308018 m E 6244149 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 23.30 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM

DATE: 15/7/19

JOB NO: 19125312

HOLE DEPTH: 15.00 m

CHECKED: BJF

DATE: 31/7/19

Drilling					Field Material Description					Defect Information		
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
NMLC	95% RETURN	100	85 (85)	10.0			SANDSTONE fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°	MW			10.08 m: B, 0-5°, Pl, Sm, Cn	
				10.5						PLI(D)=0.65 PLI(A)=1.18		
				10.61	12.69		massive					
				10.84	12.46		with irregular and indistinct silty laminations at 0° to 5°					
	95% RETURN	100	90 (95)	11.0						PLI(D)=2.03 PLI(A)=4.05	11.05 m: B, 0-5°, Pl, Sm, clay Ve	
				11.5							11.32 m: B, 0-5°, Pl, Sm, clay Ve	
				12.0							11.46 m: B, 0-5°, Pl, Sm, clay Ve	
				12.29	11.01		with lenses of siltstone					
				12.56	10.74		SILTSTONE fine grained, grey to black, indistinctly laminated at 0° to 5°			PLI(D)=0.64 PLI(A)=0.85	12.49 m: B, 0-5°, Pl, Sm, clay Ve 12.51 m: B, 0-5°, Pl, Sm, clay Ve 12.56 m: B, 0-5°, Pl, Sm, clay Ve	
				13.0						PLI(D)=2.17 PLI(A)=2.05	13.15-13.21 m: EWS, clay	
	95% RETURN	100	90 (95)	13.39	9.91		SANDSTONE fine to medium grained, massive, grey	XW MW - HW MW			13.25 m: B, 0-5°, Pl, Sm, clay Ve	
				13.96	9.34		with irregular and indistinct silty laminations at 0° to 5°				13.41 m: B, 0-5°, Pl, Sm, clay Ve	
				14.26								
				14.34	8.96		SILTSTONE fine grained, grey to black, indistinctly laminated at 0° to 5°			PLI(D)=0.52 PLI(A)=1.27		
				14.84	8.46		SANDSTONE fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°				14.69 m: B, 0-5°, Pl, Sm, clay Ve	
				15.00			with lenses of siltstone				14.84 m: B, 0-5°, Pl, Sm, clay Ve	

END OF BOREHOLE @ 15.00 m

TARGET DEPTH

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: BH303

CLIENT: Built

PROJECT: Proposed Mixed Development

LOCATION: 52 Scott Street, Liverpool

JOB NO: 19125312

COORDS: 308018 m E 6244149 m N MGA94 56 (hhGPS)

SURFACE RL: 23.30 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 15.00 m

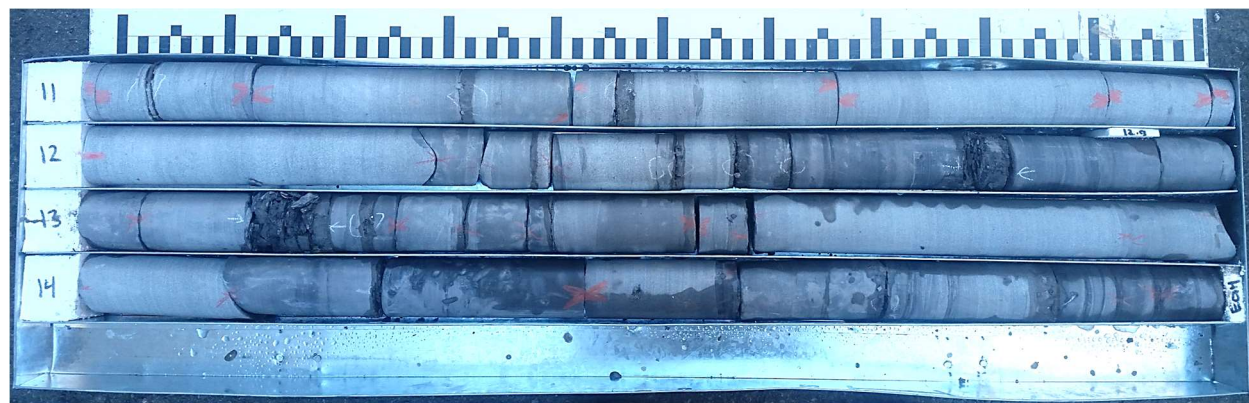
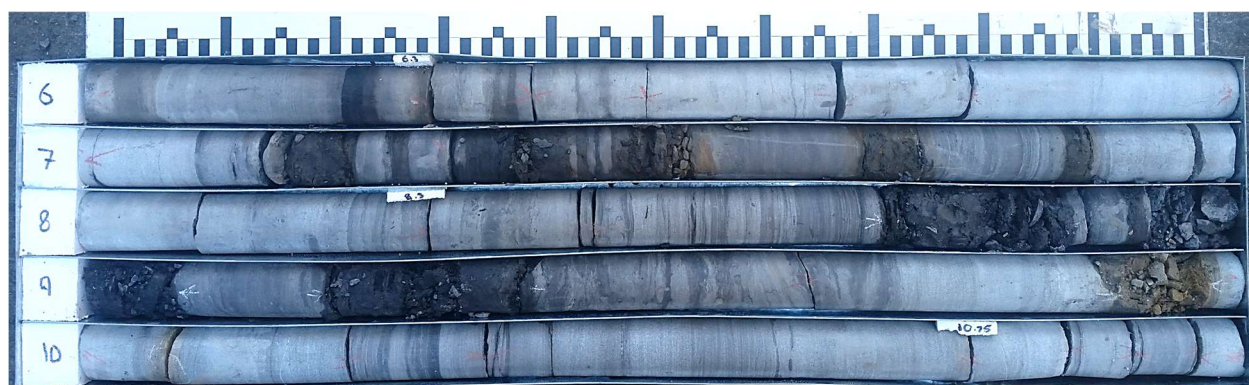
SHEET: 1 OF 1

DRILL RIG: Edson

CONTRACTOR: Nealings Drilling

LOGGED: RAM DATE: 15/7/19

CHECKED: BJF DATE: 31/7/19



This report of core photographs must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F28
RL1



GOLDER

REPORT OF BOREHOLE: BH304

SHEET: 1 OF 5

CLIENT: Built

COORDS: 308036 m E 6244123 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 24.20 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 11/7/19

JOB NO: 19125312

HOLE DEPTH: 15.21 m

CHECKED: BJF DATE: 31/7/19

Drilling				Sampling		Field Material Description																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
ADT	M-H	M-H	0.0	24.16				GP	ASPHALT FILL: Sandy GRAVEL fine to coarse grained, sub-angular, grey blue, fine to coarse grained sand	D			0.04 - 0.70 m; inferred base course																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
								CH	CLAY high plasticity, red and grey, trace fine to medium grained sand																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
								CI-CH	CLAY medium to high plasticity, orange brown and grey, with fine to medium grained sand																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
								CL-CI	Sandy CLAY low to medium plasticity, grey, fine grained sand, trace fine to medium grained, sub-angular, siltstone gravel																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
			0.70	23.50	BH304/0.7E 0.70 m 1xJar, 1xAsb, 1xPFAS, 1xASS R = 0A PP 0.80 m =125 kPa PP 0.85 m =150 kPa SPT01/1 1.00-1.30 m SPT 1.00-1.36 m 6, 10, 15/60mm HB N>25 PP 1.20 m >600 kPa SPT01/2 1.30-1.36 m PP 1.30 m >600 kPa																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: BH304

CLIENT: Built

PROJECT: Proposed Mixed Development

LOCATION: 52 Scott Street, Liverpool

JOB NO: 19125312

COORDS: 308036 m E 6244123 m N MGA94 56 (hhGPS)

SURFACE RL: 24.20 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 15.21 m

SHEET: 2 OF 5

DRILL RIG: Edson

CONTRACTOR: Nealings Drilling

LOGGED: RAM

DATE: 11/7/19

CHECKED: BJF

DATE: 31/7/19

Drilling						Field Material Description						Defect Information			
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)		DEFECT DESCRIPTION & Additional Observations		AVERAGE DEFECT SPACING (mm)	
				0.0											
				0.5											
				1.0											
				1.5											
				1.70			Continuation of Sheet 1								
				22.50			LAMINITE	HW							
				1.91			fine grained, orange brown, indistinctly laminated at 0° to 5°								
				22.29			dark brown to black	HW - MW				1.80 m: B, 0-5°, Pl, Sm, clay Ve			
				2.28											
				21.92			orange brown	HW							
				21.86			dark brown to black	HW - MW				2.30 m: B, 0-5°, Pl, Sm, clay Ve			
				2.5											
				3.0											
				3.03				XW				2.95-3.03 m: EWS, clay			
				21.17			dark red brown to black	HW							
				3.5											
				3.98											
				20.22			dark brown to black	HW - MW							
				4.0											
				4.5											
				4.35								4.35 m: B, 0-5°, Pl, Sm, clay Ve			
				4.65								4.65 m: B, 0-5°, Pl, Sm, clay Ve			
				5.0											

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH304

SHEET: 3 OF 5

CLIENT: Built

COORDS: 308036 m E 6244123 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 24.20 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 11/7/19

JOB NO: 19125312

HOLE DEPTH: 15.21 m

CHECKED: BJF DATE: 31/7/19

Drilling						Field Material Description					Defect Information	
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
								VL 0.8 L 2.0 M 6.0 H 20 VH 60 EH 200				10 20 50 100 300 1000 3000
NMLC	95% RETURN		100	95 (95)	5.0		LAMINITE fine grained, orange brown, indistinctly laminated at 0° to 5°	MW		PLI(D)=0.45 PLI(A)=0.52		
	100% RETURN		100	100 (100)	5.84 18.36		fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5° and lenses of siltstone				5.60 m: B, 0-5°, PI, Sm, clay Ve 5.81-5.84 m: lens of shell grit 5.93 m: B, 0-5°, PI, Sm, clay Ve	
					6.0							
					6.5					PLI(D)=0.94 PLI(A)=3.27		
					6.67 17.53		fine grained, dark grey to black, indistinctly laminated at 0° to 5°					
					6.90 17.30		with lenses of sandstone					
					7.0						7.05 m: B, 0-5°, PI, Sm, clay Ve	
					7.18 17.02		fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5° and lenses of siltstone			PLI(D)=0.70 PLI(A)=0.58		
					7.5							
					8.0							
					8.5						8.36 m: B, 0-5°, PI, Sm, clay Ve	
					9.0					PLI(D)=0.38 PLI(A)=0.56		
					9.5							
					9.87 14.33		fine grained, dark grey to black, indistinctly laminated at 0° to 5°	XW		PLI(D)=2.35 PLI(A)=2.62	9.87-9.91 m: EWS, clay	
					10.0							

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH304

SHEET: 4 OF 5

CLIENT: Built

COORDS: 308036 m E 6244123 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 24.20 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM

DATE: 11/7/19

JOB NO: 19125312

HOLE DEPTH: 15.21 m

CHECKED: BJF

DATE: 31/7/19

Drilling					Field Material Description					Defect Information		
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
NMLC	95% RETURN	100	70 (95)	10.0			LAMINITE fine grained, orange brown, indistinctly laminated at 0° to 5°	HW			10.00-10.04 m: EWS, clay	
								XW			10.08-10.12 m: EWS, clay	
								HW				
								XW				
	90% RETURN	100	85 (90)	10.52	13.68		with lenses of sandstone	XW			10.41-10.43 m: EWS, clay	
								HW			10.55-10.57 m: EWS, clay	
								XW				
								HW				
	95% RETURN	100	100 (100)	10.93	13.27		SANDSTONE fine to medium grained, grey, with indistinct silty laminations at 0° to 5°	MW			PLI(D)=2.21 PLI(A)=1.81	
								HW			PLI(D)=0.28 PLI(A)=1.60	
	10% RETURN	100	100 (100)	11.5				XW			11.49-11.56 m: EWS, sandy clay	
								MW				
NMLC	95% RETURN	100	100 (100)	12.61	11.59		with lenses of siltstone				PLI(D)=0.30 PLI(A)=1.14	
	90% RETURN	100	100 (100)	12.90	11.30		massive					
	10% RETURN	100	100 (100)	13.62	10.58		SILTSTONE fine grained, grey to black, with indistinct silty laminations at 0° to 5° and lenses of sandstone				UCS=32.0 PLI(D)=0.84 PLI(A)=3.56	
NMLC	95% RETURN	100	100 (100)	14.84	9.36		SANDSTONE fine to medium grained, massive, grey				PLI(D)=0.67 PLI(A)=0.77	
	90% RETURN	100	100 (100)									
	10% RETURN	100	100 (100)									

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH304

CLIENT: Built

COORDS: 308036 m E 6244123 m N MGA94 56 (hhGPS)

SHEET: 5 OF 5

PROJECT: Proposed Mixed Development

SURFACE RL: 24.20 m DATUM: AHD

DRILL RIG: Edson

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

CONTRACTOR: Nealings Drilling

JOB NO: 19125312

HOLE DEPTH: 15.21 m

LOGGED: RAM DATE: 11/7/19

CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations			AVERAGE DEFECT SPACING (mm)
NMLC		100	100 (100)	15.0	15.21		SANDSTONE fine to medium grained, massive, grey	MW						
				8.99			END OF BOREHOLE @ 15.21 m TARGET DEPTH PIEZOMETER INSTALLED			PLI(D)=2.10 PLI(A)=4.93				
				15.5										
				16.0										
				16.5										
				17.0										
				17.5										
				18.0										
				18.5										
				19.0										
				19.5										
				20.0										

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: BH304

CLIENT: Built

PROJECT: Proposed Mixed Development

LOCATION: 52 Scott Street, Liverpool

JOB NO: 19125312

COORDS: 308036 m E 6244123 m N MGA94 56 (hhGPS)

SURFACE RL: 24.20 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 15.21 m

SHEET: 1 OF 1

DRILL RIG: Edson

CONTRACTOR: Nealings Drilling

LOGGED: RAM DATE: 11/7/19

CHECKED: BJF DATE: 31/7/19



This report of core photographs must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F28
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: BH304

SHEET: 1 OF 1

CLIENT: Built

COORDS: 308036 m E 6244123 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 24.20 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM

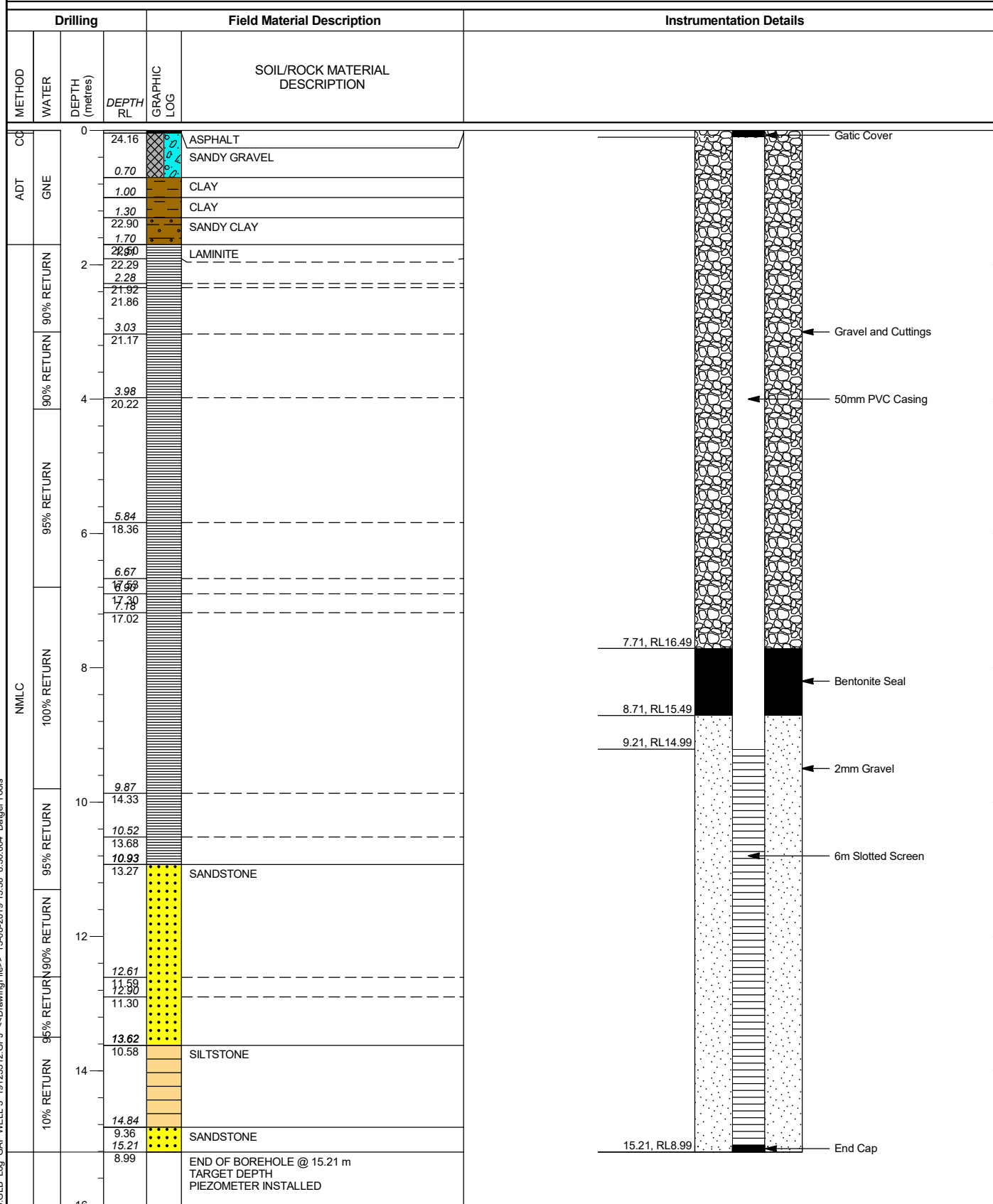
DATE: 11/7/19

JOB NO: 19125312

HOLE DEPTH: 15.21 m

CHECKED: BJF

DATE: 31/7/19



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: BH305

SHEET: 1 OF 5

CLIENT: Built

COORDS: 308073 m E 6244146 m N MGA94 56 (hhGPS)

DRILL RIG: Kamutsu

PROJECT: Proposed Mixed Development

SURFACE RL: 26.10 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 20/7/19

JOB NO: 19125312

HOLE DEPTH: 15.16 m

CHECKED: BJF DATE: 31/7/19

Drilling				Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HA	M-H		0.0	26.06	BH305/0.4E 0.40 m 1xJar, 1xAsb, 1xPFAS R = 1A			GP	ASPHALT	M			0.04 - 0.15 m; inferred basecourse	
			FILL: Sandy GRAVEL fine to coarse grained, blue grey, fine to coarse grained sand											
	0.15	26.06												
	0.20	25.90												
			0.5							SP	FILL: SILTSTONE fine grained, grey and orange, indistinctly laminated, extremely weathered to highly weathered, medium strength			
ADT	L-M	GNE							FILL: SAND fine to coarse grained, brown to black, trace fine to coarse grained, sub-angular to sub-rounded gravel, trace low plasticity clay	D				
			1.0	1.00 25.10			CH	CLAY high plasticity, red and orange, trace fine to coarse grained sand			St	RESIDUAL SOIL		
			1.5											
			2.0											
			2.5											
			2.5	1.60 24.50				CI	Sandy CLAY medium plasticity, pale orange brown and grey, fine to medium grained sand, trace fine to coarse grained, sub-angular, siltstone gravel	w < PL		H		
			3.0											
			3.5											
			4.0											
			4.5											
			5.0											
									For Continuation Refer to Sheet 2					

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: BH305

SHEET: 2 OF 5

CLIENT: Built

COORDS: 308073 m E 6244146 m N MGA94 56 (hhGPS)

DRILL RIG: Kamutsu

PROJECT: Proposed Mixed Development

SURFACE RL: 26.10 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 20/7/19

JOB NO: 19125312

HOLE DEPTH: 15.16 m

CHECKED: BJF DATE: 31/7/19

Drilling						Field Material Description					Defect Information	
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
								VL 0.8 L 2.0 M 6.0 H 20 VH 60 EH 200				10 20 100 300 1000 3000
				0.0								
				0.5								
				1.0								
				1.5								
				2.0								
				2.5								
				2.70			Continuation of Sheet 1					
				23.40			CORE LOSS					
				2.90								
				23.20			Sandy CLAY (CI)				2.90 m: 2.90 - 3.03 m; inferred extremely	
				3.03			medium plasticity, pale orange brown and grey, fine to				weathered Laminite/Siltstone	
				23.07			medium grained sand, Moist, dry of plastic limit., hard	HW			3.09-3.12 m: EWS, clay	
				3.31			LAMINITE	XW				
				22.79			fine grained, dark grey to black and orange brown,	HW				
							indistinctly laminated at 0° to 5°					
				3.79			fine to medium grained, grey and orange brown, with					
				22.31			irregular and indistinct silty laminations at 0° to 5°			PLI(D)=0.46 PLI(A)=1.01		
				4.23								
				4.35								
				4.54								
				4.58								
				4.87								
				4.94								
				21.16								

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



REPORT OF BOREHOLE: BH305

CHECKED: BJF DATE: 31/7/19

JOB NO: 19125312

HOLE DEPTH: 15.16 m

[illegible]

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH305

SHEET: 4 OF 5

CLIENT: Built

COORDS: 308073 m E 6244146 m N MGA94 56 (hhGPS)

DRILL RIG: Kamutsu

PROJECT: Proposed Mixed Development

SURFACE RL: 26.10 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 20/7/19

JOB NO: 19125312

HOLE DEPTH: 15.16 m

CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information		
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
NMLC	95% RETURN	100	95 (95)	10.0	10.07		LAMINITE fine grained, dark grey to black and orange brown, indistinctly laminated at 0° to 5°	MW		PLI(D)=0.36 PLI(A)=0.38	10.13 m: J, 30°, Pl, Sm, Cn	
					10.5		fine grained, dark grey to black, indistinctly laminated at 0° to 5°				10.48 m: B, 0-5°, Pl, Sm, clay Ve	
					11.0						10.76 m: J, 20-30°, Pl, Sm, Cn	
					11.19		with irregular and indistinct silty laminations at 0° to 5°					
					11.62		fine grained, dark grey to black, indistinctly laminated at 0° to 5°					
	95% RETURN	100	55 (85)		11.91			MW		PLI(D)=0.78 PLI(A)=2.07	11.65 m: B, 0-5°, Pl, Sm, clay Ve	
					12.0						11.70 m: B, 0-5°, Pl, Sm, clay Ve	
					12.5						11.81 m: B, 0-5°, Pl, Sm, clay Ve	
					12.74		SANDSTONE fine to medium grained, massive, grey				11.88 m: B, 0-5°, Pl, Sm, clay Ve	
					13.0		with irregular and indistinct silty laminations at 0° to 5°				11.91 m: B, 0-5°, Pl, Sm, clay Ve	
NMLC	95% RETURN	100	100 (100)		13.36			FR - MW		PLI(D)=0.16 PLI(A)=0.63	11.99-12.02 m: EWS, clayey gravel	
					13.19		with irregular and indistinct silty laminations at 0° to 5°				12.18 m: B, 0-5°, Pl, Sm, clay Ve	
					13.44		massive				12.23 m: B, 0-5°, Pl, Sm, clay Ve	
					13.69		with irregular and indistinct silty laminations at 0° to 5°				12.55 m: J, 30°, Pl, Sm, Cn	
					14.0		massive				12.68 m: B, 0-5°, Pl, Sm, clay Ve	
	95% RETURN	100	100 (100)		14.07					PLI(D)=1.10 PLI(A)=1.99		
					14.39		SILTSTONE fine grained, dark grey to black, indistinctly laminated at 0° to 5°					
					14.59							
					14.89		SANDSTONE fine to medium grained, massive, grey					
					15.0		with irregular and indistinct silty laminations at 0° to 5°					

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH305

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308073 m E 6244146 m N MGA94 56 (hhGPS)
SURFACE RL: 26.10 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.16 m

SHEET: 5 OF 5
DRILL RIG: Kamutsu
CONTRACTOR: Nealings Drilling
LOGGED: RAM DATE: 20/7/19
CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)		
												10	20	3000
NMLC			100	100 (100)	15.0	15.09	SILTSTONE fine grained, dark grey to black, indistinctly laminated at 0° to 5° END OF BOREHOLE @ 15.16 m TARGET DEPTH BACKFILLED	FR - MW		PLI(D)=0.80 PLI(A)=2.78	15.13 m: B, 0-5°, Pl, Sm, clay Ve			
					15.16									
					10.94									
					15.5									
					16.0									
					16.5									
					17.0									
					17.5									
					18.0									
					18.5									
					19.0									
					19.5									
					20.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: BH305

CLIENT: Built

PROJECT: Proposed Mixed Development

LOCATION: 52 Scott Street, Liverpool

JOB NO: 19125312

COORDS: 308073 m E 6244146 m N MGA94 56 (hhGPS)

SURFACE RL: 26.10 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 15.16 m

SHEET: 1 OF 1

DRILL RIG: Kamatsu

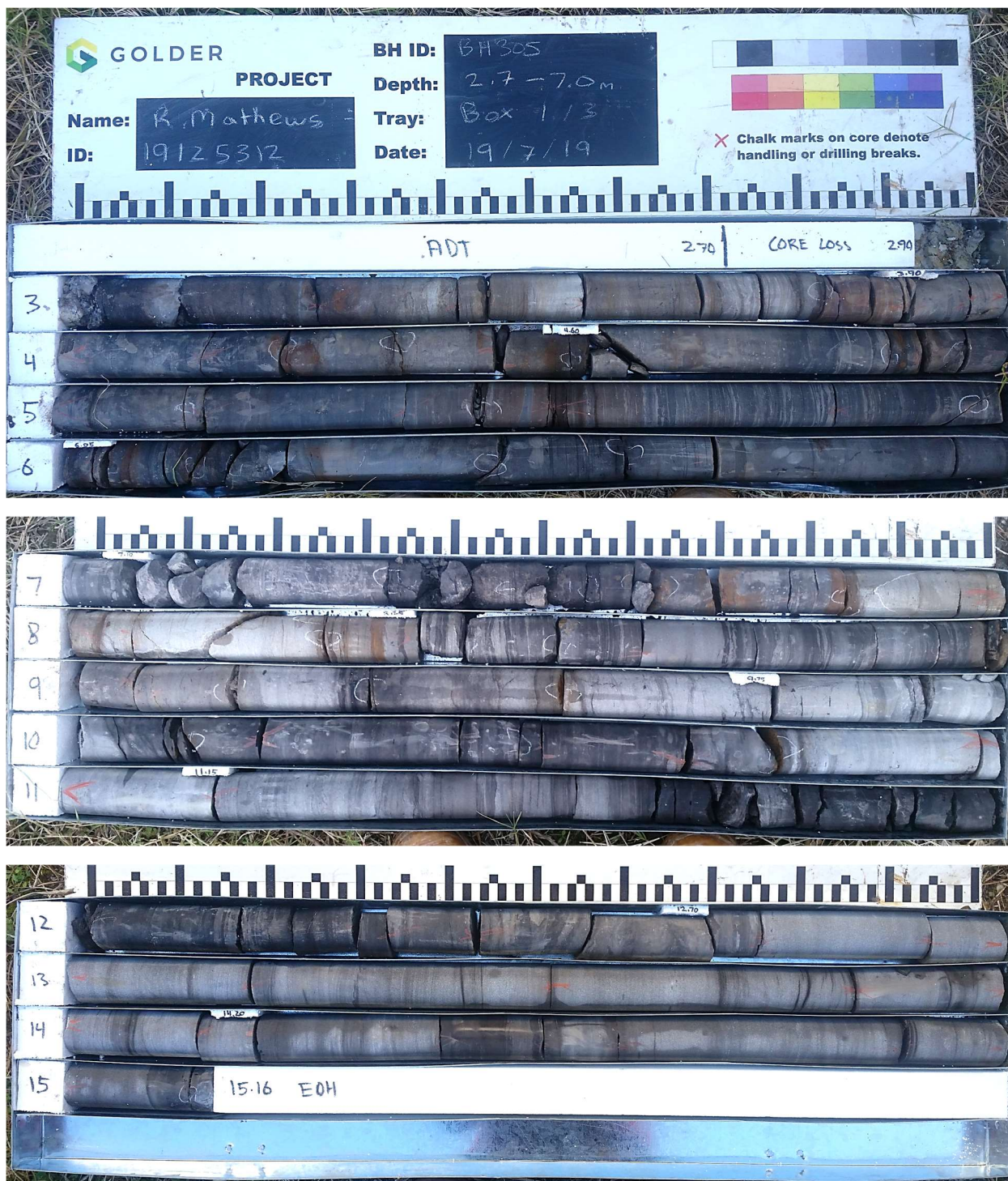
CONTRACTOR: Nealings Drilling

LOGGED: RAM

DATE: 20/7/19

CHECKED: BJF

DATE: 31/7/19



This report of core photographs must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F28
RL1



GOLDER

REPORT OF BOREHOLE: BH306

SHEET: 1 OF 5

CLIENT: Built

COORDS: 308101 m E 6244174 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 25.30 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 9/7/19

JOB NO: 19125312

HOLE DEPTH: 15.10 m

CHECKED: BJF DATE: 31/7/19

Drilling				Sampling		Field Material Description										
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS				
ADT	M	GNE	0.0	25.30	BH306/0.5E 0.50 m 1xJar, 1xAsb, 1xPFAS R = 1A			SC	FILL: Clayey SAND fine to coarse grained, brown, low plasticity clay, trace fine to coarse grained, sub-rounded to sub-angular gravel	D		0.0 - 1.0 m; fragments of brick and asphalt up to 30mm in size				
			0.5													
			1.0	1.00 24.30					SPT01/1 1.00-1.35 m SPT 1.00-1.45 m 2, 4, 3 N=7							increasing clay content
			1.35 23.95	SPT01/2 1.35-1.45 m PP 1.40 m =100 kPa PP 1.45 m =125 kPa BH306/1.5E 1.50 m 1xJar, 1xPFAS, 1xASS R = 0A										CL-CH	CLAY medium to high plasticity, red, orange brown and grey, trace fine to medium grained sand, trace fine to medium grained, sub-anglar, siltstone gravel	
	L-M		1.5								St	RESIDUAL SOIL				
			2.0								w < PL					
	M-H		2.5	2.50 22.80	SPT02 2.50-2.70 m SPT 2.50-2.70 m 24, 15/50mm HB N>15			CL-CI	Sandy CLAY low to medium plasticity, orange brown and grey, fine to medium grained sand	H						
										For Continuation Refer to Sheet 2						
					3.0											
					3.5											
			4.0													
			4.5													
			5.0													

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: BH306

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308101 m E 6244174 m N MGA94 56 (hhGPS)
SURFACE RL: 25.30 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.10 m

SHEET: 2 OF 5
DRILL RIG: Edson
CONTRACTOR: Nealings Drilling
LOGGED: RAM DATE: 9/7/19
CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information		
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
				0.0								
				0.5								
				1.0								
				1.5								
				2.0								
				2.5								
				2.70								
				22.60								
				3.0								
				3.36								
				21.94								
				3.5								
				4.0								
				4.5								
				5.0								

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH306

SHEET: 3 OF 5

CLIENT: Built

COORDS: 308101 m E 6244174 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 25.30 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 9/7/19

JOB NO: 19125312

HOLE DEPTH: 15.10 m

CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information		
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
								WL 0.8 L 2.0 M 6.0 H 20 VH 60 EH 200				10 20 50 100 300 1000 3000
NMLC	85% RETURN	100	95 (100)	5.0			LAMINITE fine grained, grey brown, indistinctly laminated at 0° to 5°	HW			5.15-5.16 m: EWS, sandy clay 5.18 m: B, 0-5°, Pl, Sm, clay Ve 5.27 m: B, 0-5°, Pl, Sm, clay Ve	
				5.5	5.50 19.80		dark brown to black	XW HW				
				6.0						PLI(D)=0.45 PLI(A)=0.61		
				6.5								
				6.28	19.02		grey brown				6.41 m: J, 30°, Cv, Sm, Cn	
				6.5						PLI(D)=0.35 PLI(A)=0.33	6.75 m: J, 10-15°, Cv, Sm, Cn	
	90% RETURN	100	95 (95)	7.0	7.00 18.30		dark brown to black				6.96 m: B, 0-5°, Pl, Sm, clay Ve	
				7.5							7.39 m: B, 0-5°, Pl, Sm, clay Ve	
				7.61	17.69		with irregular sandstone lenses			PLI(D)=0.18 PLI(A)=0.35	7.79 m: B, 0-5°, Pl, Sm, clay Ve	
				7.89	17.41		fine to medium grained, grey, with irregular and indistinct crossbeds at 0° to 5°	MW HW			8.32 m: B, 0-5°, Pl, Sm, clay Ve	
				8.5								
				8.68	16.62		with irregular siltstone lenses	XW MW HW		PLI(D)=0.53 PLI(A)=0.11	8.65-8.68 m: EWS, clay	
	95% RETURN	55	90 (95)	9.0	9.04 16.26		fine grained, dark brown to black, indistinctly laminated at 0° to 5°				9.04 m: B, 0-5°, Pl, Sm, clay Ve 9.10 m: B, 0-5°, Pl, Sm, clay Ve	
				9.24	16.06		fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°			PLI(D)=1.07 PLI(A)=1.50	9.90 m: J, 30°, Pl, Sm, Cn 9.94 m: B, 0-5°, Pl, Sm, clay Ve	
				9.5								
				10.0								

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH306

SHEET: 4 OF 5

CLIENT: Built

COORDS: 308101 m E 6244174 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 25.30 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 9/7/19

JOB NO: 19125312

HOLE DEPTH: 15.10 m

CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information		
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
NMLC	95% RETURN	55	90 (95)	10.0			LAMINITE fine grained, grey brown, indistinctly laminated at 0° to 5°	MW - HW				
				10.26								
				15.04			fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°				10.17 m: B, 0-5°, Pl, Sm, clay Ve 10.23 m: B, 0-5°, Pl, Sm, clay Ve	
				10.5						PLI(D)=1.20 PLI(A)=1.44		
	95% RETURN	100	80 (85)	11.0								
				11.42								
				13.88			fine grained, dark brown to black, indistinctly laminated at 0° to 5°	XW			11.43-11.72 m: EWS, clay	
				11.5						PLI(D)=1.69 PLI(A)=1.07		
	95% RETURN	100	80 (85)	12.0				MW - HW			11.77 m: B, 0-5°, Pl, Sm, clay Ve	
				12.49							11.96 m: B, 0-5°, Pl, Sm, clay Ve	
				12.81			SANDSTONE fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°	MW			12.10 m: J, 30°, Pl, Sm, Cn 12.22 m: B, 0-5°, Pl, Sm, clay Ve	
				12.78			massive			PLI(D)=0.52 PLI(A)=0.71	12.40 m: B, 0-5°, Pl, Sm, clay Ve	
NMLC	95% RETURN	100	100 (100)	12.52								
				13.0								
				13.05			with irregular and indistinct silty laminations at 0° to 5°					
				12.25								
	95% RETURN	100	100 (100)	13.5								
				14.0						PLI(D)=0.47 PLI(A)=1.53		
				14.42			with distinct silty crossbeds at 0° to 5°					
				10.88			massive			PLI(D)=0.54 PLI(A)=0.64	14.71 m: B, 0-5°, Pl, Sm, clay Ve	
	95% RETURN	100	100 (100)	14.63								
				10.67			with irregular and indistinct silty laminations at 0° to 5°					
				14.80								
				10.50							14.94 m: B, 0-5°, Pl, Sm, clay Ve	

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH306

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308101 m E 6244174 m N MGA94 56 (hhGPS)
SURFACE RL: 25.30 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.10 m

SHEET: 5 OF 5
DRILL RIG: Edson
CONTRACTOR: Nealings Drilling
LOGGED: RAM DATE: 9/7/19
CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)		
			100	15.0	15.10 10.20		END OF BOREHOLE @ 15.10 m TARGET DEPTH PIEZOMETER INSTALLED	MW		PLI(D)=0.93 PLI(A)=2.02				
				15.5										
				16.0										
				16.5										
				17.0										
				17.5										
				18.0										
				18.5										
				19.0										
				19.5										
				20.0										

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



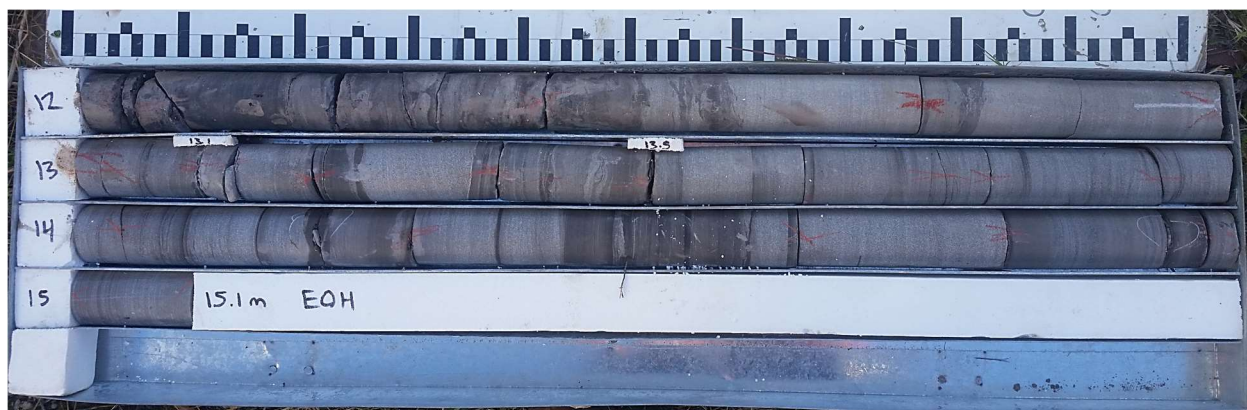
GOLDER

REPORT OF CORE PHOTOGRAPHS: BH306

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308101 m E 6244174 m N MGA94 56 (hhGPS)
SURFACE RL: 25.30 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.10 m

SHEET: 1 OF 1
DRILL RIG: Edson
CONTRACTOR: Nealings Drilling
LOGGED: RAM DATE: 9/7/19
CHECKED: BJF DATE: 31/7/19





GOLDER

REPORT OF STANDPIPE INSTALLATION: BH306

SHEET: 1 OF 1

CLIENT: Built

COORDS: 308101 m E 6244174 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 25.30 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM

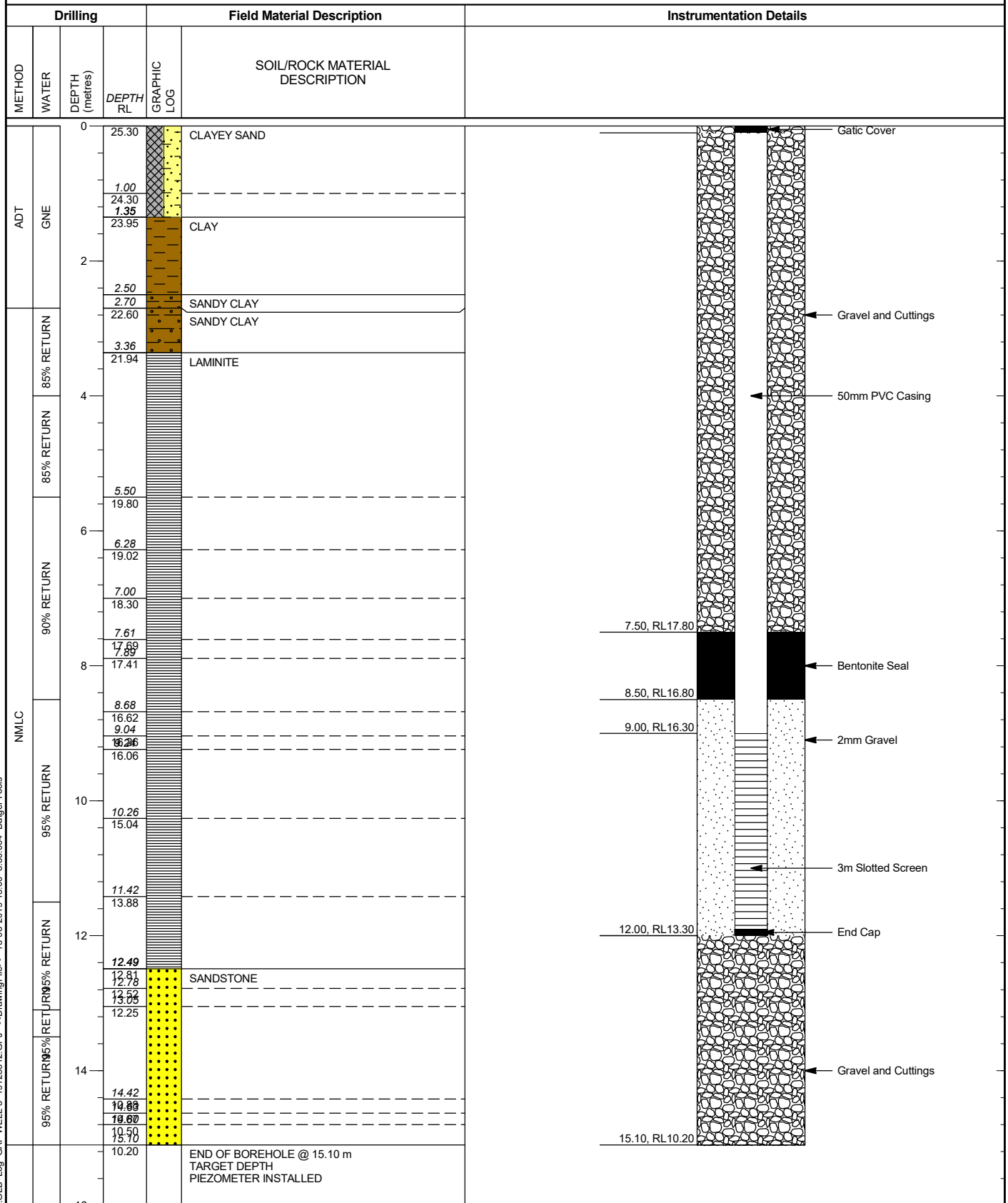
DATE: 9/7/19

JOB NO: 19125312

HOLE DEPTH: 15.10 m

CHECKED: BJF

DATE: 31/7/19



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: BH307

SHEET: 1 OF 5

CLIENT: Built

COORDS: 308125 m E 6244162 m N MGA94 56 (hhGPS)

DRILL RIG: Edson

PROJECT: Proposed Mixed Development

SURFACE RL: 25.10 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 18/7/19

JOB NO: 19125312

HOLE DEPTH: 15.68 m

CHECKED: BJF DATE: 31/7/19

Drilling					Sampling		Field Material Description									
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS				
ADT	H	GNE	0.0	25.10	BH307/0.5E 0.50 m 1xJar, 1xAsb, 1xPFAS, 1xASS			SP	CONCRETE			0.16 - 0.30 m; inferred bedding sand				
	L-M		0.16	24.94					FILL: SAND fine to coarse grained, red	M						
			0.30	24.80					CH	CLAY high plasticity, mottled red and orange brown, trace fine to coarse grained sand, inferred stiff to very stiff consistency	St - VSt					
			0.5						CI	Sandy CLAY medium plasticity, pale orange brown and grey, fine to medium grained sand, trace fine to coarse grained, sub-angular, siltstone gravel			w < PL			
			0.90	24.20										H		
	M-H		1.0													
			1.5													
			2.0													
			2.5													
			3.0													
3.5																
4.0																
4.5																
5.0																

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: BH307

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308125 m E 6244162 m N MGA94 56 (hhGPS)
SURFACE RL: 25.10 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.68 m

SHEET: 2 OF 5
DRILL RIG: Edson
CONTRACTOR: Nealings Drilling
LOGGED: RAM DATE: 18/7/19
CHECKED: BJF DATE: 31/7/19

Drilling						Field Material Description						Defect Information			
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)		DEFECT DESCRIPTION & Additional Observations		AVERAGE DEFECT SPACING (mm)	
				0.0											
				0.5											
				1.0											
				1.5											
				2.0											
				2.20			Continuation of Sheet 1								
				22.90			SANDSTONE fine to medium grained, grey and orange brown, with irregular and indistinct silty laminations at 0° to 5°	HW XW HW		PLI(D)=0.40 PLI(A)=0.07		2.25-2.28 m: EWS, clayey gravel			
				2.5								2.55-2.60 m: EWS, clay			
				2.72			SILTSTONE fine grained, red brown and grey black, indistinctly laminated at 0° to 5°	XW HW				2.72 m: J, 0-5°, PI, Sm, Cn			
				22.38								2.88 m: B, 0-5°, PI, Sm, clay Ve			
				3.0						PLI(D)=0.16 PLI(A)=0.24					
				3.5				XW HW				3.39-3.41 m: EWS, sandy clay			
				4.0				XW HW				3.76-3.82 m: EWS, sandy clay			
				4.08				XW				3.95-4.08 m: EWS, sandy clay			
				21.02			SANDSTONE fine to medium grained, grey and orange brown, with irregular and indistinct silty laminations at 0° to 5°	HW		PLI(D)=0.31 PLI(A)=0.69		4.28 m: B, 0-5°, PI, Sm, clayey gravel Ve			
				4.5								4.57 m: B, 0-5°, PI, Sm, clay Ve			
				4.70								4.70 m: B, 0-5°, PI, Sm, clay Ve			
				4.88								4.84 m: B, 0-5°, PI, Sm, clay Ve			
				20.22			SILTSTONE fine grained, grey black and dark red brown,								
				5.0											

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH307

CLIENT: Built

COORDS: 308125 m E 6244162 m N MGA94 56 (hhGPS)

SHEET: 5 OF 5

PROJECT: Proposed Mixed Development

SURFACE RL: 25.10 m DATUM: AHD

DRILL RIG: Edson

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

CONTRACTOR: Nealings Drilling

JOB NO: 19125312

HOLE DEPTH: 15.68 m

LOGGED: RAM

DATE: 18/7/19

CHECKED: BJF

DATE: 31/7/19

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations		AVERAGE DEFECT SPACING (mm)	
NMLC	95% RETURN	100	100 (100)	15.0			SANDSTONE fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°	MW						
				15.27	9.83									
				15.49	9.61		SILTSTONE fine grained, dark grey to black, indistinctly laminated at 0° to 5°				15.29 m: B, 0-5°, Pl, Sm, clay Ve			
				15.68	9.42		with lenses of sandstone				15.56 m: B, 0-5°, Pl, Sm, clay Ve			
							END OF BOREHOLE @ 15.68 m TARGET DEPTH BACKFILLED			PLI(D)=1.01 PLI(A)=1.41				
				16.0										
				16.5										
				17.0										
				17.5										
				18.0										
				18.5										
				19.0										
				19.5										
				20.0										

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: BH307

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308125 m E 6244162 m N MGA94 56 (hhGPS)
SURFACE RL: 25.10 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.68 m

SHEET: 1 OF 1

DRILL RIG: Edson

CONTRACTOR: Nealings Drilling

LOGGED: RAM DATE: 18/7/19

CHECKED: BJF DATE: 31/7/19



This report of core photographs must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F28
RL1



GOLDER

REPORT OF BOREHOLE: BH309

SHEET: 1 OF 4

CLIENT: Built

COORDS: 308067 m E 6244209 m N MGA94 56 (MAP)

DRILL RIG: Kamutsu

PROJECT: Proposed Mixed Development

SURFACE RL: 22.40 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 23/7/19

JOB NO: 19125312

HOLE DEPTH: 15.00 m

CHECKED: BJF DATE: 31/7/19

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
CC ADT	H	GNE	0.0	22.40	BH309/0.4E 0.40 m 1xJar, 1xASS R = 0A PP 0.50 m =200 kPa PP 0.60 m =200 kPa			CH	CONCRETE	w < PL	St - VSt	RESIDUAL SOIL	
			0.20										
			22.20										
			0.35										
			22.05										
	L-M		0.5						CLAY high plasticity, red and orange, trace fine to coarse grained sand				
			0.60						Sandy CLAY medium plasticity, orange brown and grey, fine to medium grained sand				
			21.80										
			0.90						trace fine to coarse grained, sub-angular, sandstone gravel				
	M-H		1.0										
			21.50										
			1.5					For Continuation Refer to Sheet 2					
			2.0										
			2.5										
			3.0										
			3.5										
			4.0										
			4.5										
			5.0										

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: BH309

SHEET: 3 OF 4

CLIENT: Built

COORDS: 308067 m E 6244209 m N MGA94 56 (MAP)

DRILL RIG: Kamutsu

PROJECT: Proposed Mixed Development

SURFACE RL: 22.40 m DATUM: AHD

CONTRACTOR: Nealings Drilling

LOCATION: 52 Scott Street, Liverpool

INCLINATION: -90°

LOGGED: RAM DATE: 23/7/19

JOB NO: 19125312

HOLE DEPTH: 15.00 m

CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)		
									0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0			10 30 100 300 1000 3000		
NMLC	95% RETURN	100	60 (80)	5.0			LAMINITE fine to medium grained, massive, orange brown and grey	HW			4.99 m: B, 0-5°, Pl, Sm, clay Ve 5.05 m: B, 0-5°, Pl, Sm, clay Ve			
				5.5	5.51 16.89		fine to medium grained, massive, orange brown and grey				5.25 m: B, 0-5°, Pl, Sm, clay Ve			
					5.89 16.51		with irregular and indistinct silty laminations at 0° to 5°			PLI(D)=0.17 PLI(A)=0.21	5.89 m: B, 0-5°, Pl, Sm, clay Ve			
				6.0	6.09 16.31		massive			PLI(D)=1.15 PLI(A)=1.05	6.07 m: B, 0-5°, Pl, Sm, clay Ve 6.10 m: B, 0-5°, Pl, Sm, clay Ve			
				6.5	6.40 16.00		fine grained, dark red to black, indistinctly laminated at 0° to 5°				6.40 m: B, 0-5°, Pl, Sm, clay Ve			
											6.63 m: B, 0-5°, Pl, Sm, clay Ve			
					6.98 15.42		fine to medium grained, massive, grey brown	XW HW MW HW			6.79-6.85 m: EWS, clay 6.94 m: B, 0-5°, Pl, Sm, clay Ve			
				7.5	7.60 14.80		fine grained, dark grey to black, indistinctly laminated at 0° to 5°	MW		PLI(D)=0.32 PLI(A)=0.74	7.64 m: B, 0-5°, Pl, Sm, clay Ve			
					7.91 14.47 8.04 14.36		CORE LOSS	MW			7.88 m: B, 0-5°, Pl, Sm, clay Ve 7.90 m: B, 0-5°, Pl, Sm, clay Ve 7.95 m: B, 0-5°, Pl, Sm, clay Ve 7.97 m: B, 0-5°, Pl, Sm, clay Ve			
					8.28 14.12		LAMINITE fine grained, dark grey to black, indistinctly laminated at 0° to 5° with lenses of sandstone			PLI(D)=0.61 PLI(A)=0.65	8.12 m: B, 0-5°, Pl, Sm, clay Ve			
				8.5	8.47 13.93		fine to medium grained, massive, grey with irregular and indistinct silty laminations at 0° to 5°							
				9.0	9.20 13.20		fine grained, dark grey to black, indistinctly laminated at 0° to 5°			PLI(D)=0.90 PLI(A)=0.94	9.25 m: B, 0-5°, Pl, Sm, clay Ve 9.29 m: J, 30°, Pl, Sm, Cn 9.35 m: B, 0-5°, Pl, Sm, clay Ve 9.43 m: J, 30°, Pl, Sm, Cn			
			9.5				XW MW			9.52-9.55 m: EWS, clayey gravel 9.61 m: B, 0-5°, Pl, Sm, clay Ve 9.72 m: J, 30°, Pl, Sm, Cn 9.80 m: B, 0-5°, Pl, Sm, clay Ve 9.84 m: B, 0-5°, Pl, Sm, clay Ve 9.88 m: B, 0-5°, Pl, Sm, clay Ve				

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF BOREHOLE: BH309

CLIENT: Built
PROJECT: Proposed Mixed Development
LOCATION: 52 Scott Street, Liverpool
JOB NO: 19125312

COORDS: 308067 m E 6244209 m N MGA94 56 (MAP)
SURFACE RL: 22.40 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 4 OF 4
DRILL RIG: Kamutsu
CONTRACTOR: Nealings Drilling
LOGGED: RAM DATE: 23/7/19
CHECKED: BJF DATE: 31/7/19

Drilling					Field Material Description					Defect Information		
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm)
NMLC	95% RETURN	95	40 (65)	10.0	10.00		LAMINITE fine grained, dark grey to black, indistinctly laminated at 0° to 5° with lenses of sandstone	MW			10.20 m: B, 0-5°, Pl, Sm, clay Ve	
				10.36	10.36		SANDSTONE fine to medium grained, massive, grey with irregular and indistinct silty laminations at 0° to 5°	FR - MW		PLI(D)=0.39 PLI(A)=1.01	10.42 m: B, 0-5°, Pl, Sm, clay Ve	
	95% RETURN	100	100 (100)	11.0						PLI(D)=0.98 PLI(A)=1.54		
				11.5								
	95% RETURN	100	100 (100)	12.0	12.08		SILTSTONE fine grained, dark grey to black, indistinctly laminated at 0° to 5°				12.21 m: B, 0-5°, Pl, Sm, clay Ve	
				12.34	12.34		SANDSTONE fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5° massive			PLI(D)=1.84 PLI(A)=3.74		
				12.78	12.78		SILTSTONE fine grained, dark grey to black, indistinctly laminated at 0° to 5°				12.78 m: J, 15-20°, Pl, Sm, Cn	
				13.0	13.13		SANDSTONE fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°			PLI(D)=0.42 PLI(A)=0.59		
	95% RETURN	105	105 (105)	14.0	14.03		SILTSTONE fine grained, dark grey to black, indistinctly laminated at 0° to 5°					
				14.19	14.19		SANDSTONE fine to medium grained, grey, with irregular and indistinct silty laminations at 0° to 5°			PLI(D)=0.14 PLI(A)=0.98		
				15.0	15.00		END OF BOREHOLE @ 15.00 m TARGET DEPTH BACKFILLED				14.92 m: B, 0-5°, Pl, Sm, clay Ve	

This report of borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F02a
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: BH309

CLIENT: Built

PROJECT: Proposed Mixed Development

LOCATION: 52 Scott Street, Liverpool

JOB NO: 19125312

COORDS: 308067 m E 6244209 m N MGA94 56 (MAP)

SURFACE RL: 22.40 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 15.0 m

SHEET: 1 OF 1

DRILL RIG: Kamatsu

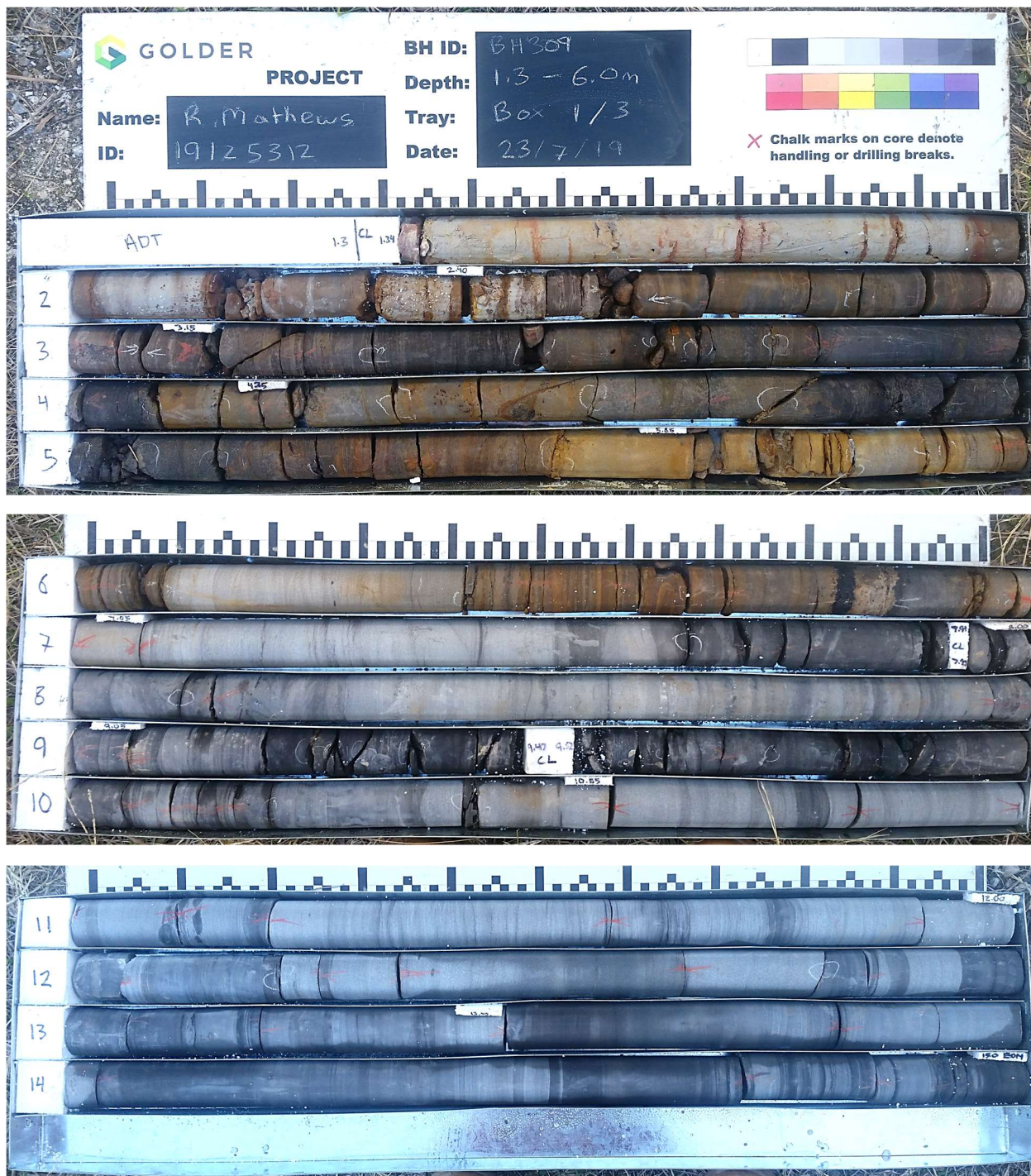
CONTRACTOR: Nealings Drilling

LOGGED: RAM

DATE: 23/7/19

CHECKED: BJF

DATE: 31/7/19



This report of core photographs must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F28
RL1



GOLDER

REPORT OF HAND AUGERED BOREHOLE: BH402

SHEET: 1 OF 1

CLIENT: Built

PROJECT: Proposed Mixed Development

LOCATION: 52 Scott Street, Liverpool

JOB NO: 19125312

COORDS: 308044 m E 6244136 m N MGA94 56

INCLINATION: -90°

HOLE DEPTH: 0.20 m

LOGGED: RAM

DATE: 10/7/19

CHECKED: BJF

DATE: 31/7/19

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	CO		0.0	0.04				GP	ASPHALT		
	M-H	GNE		0.15					FILL: Sandy GRAVEL fine to coarse grained, sub-angular, blue grey, fine to coarse grained sand	M	0.04 - 0.15 m; inferred base course
									FILL: SILTSTONE fine grained, grey and orange brown, indistinctly laminated, extremely weathered to highly weathered, medium strength		
									END OF HAND AUGER @ 0.20 m		
									REFUSAL		
									GROUNDWATER NOT ENCOUNTERED		
									BACKFILLED		
			0.5								
			1.0								
			1.5								
			2.0								

Sketch & Other Observations



This report of hand augered borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F03a
RL3



GOLDER

REPORT OF HAND AUGERED BOREHOLE: BH403

SHEET: 1 OF 1

CLIENT: Built

PROJECT: Proposed Mixed Development

LOCATION: 52 Scott Street, Liverpool

JOB NO: 19125312

COORDS: 308058 m E 6244144 m N MGA94 56 (hhGPS)

INCLINATION: -90°

HOLE DEPTH: 0.36 m

LOGGED: RAM

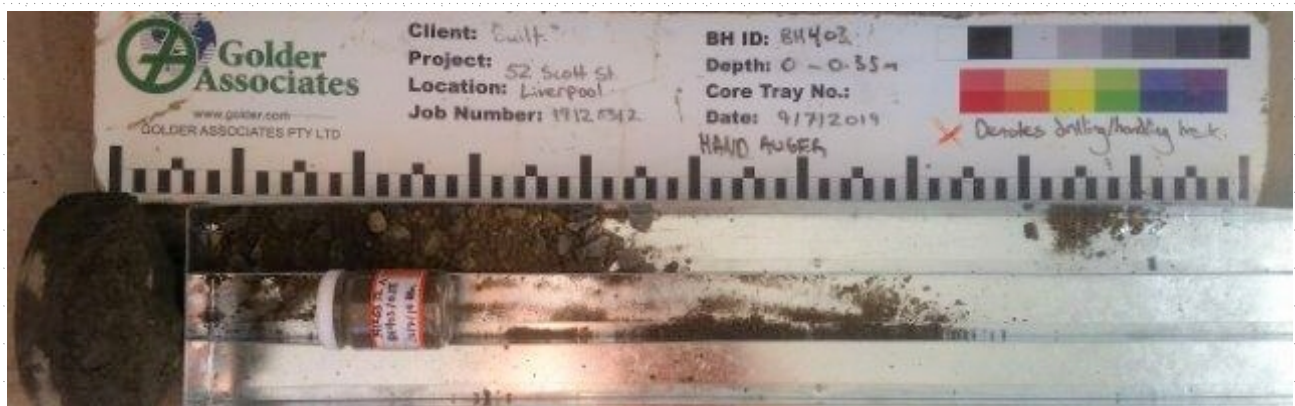
DATE: 10/7/19

CHECKED: BJF

DATE: 31/7/19

Drilling				Sampling			Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC			0.0	0.04 0.10	BH403/0.2E 0.20 m 1xJar, 1 xAsb, 1xPFAS			GP	ASPHALT	M			0.04 - 0.10 m; inferred base course 0.10 - 0.35 m; trace fragments of brick and asphalt up to 20 mm in size
HA	M-H	GNE						CL	FILL: Sandy GRAVEL fine to coarse grained, sub-angular, blue grey, fine to coarse grained sand FILL: Sandy CLAY low plasticity, brown, fine to coarse grained sand, trace fine to coarse grained, sub-rounded to sub-angular gravel	w < PL			
			0.35						FILL: SILTSTONE fine grained, grey and orange, indistinctly laminated, extremely weathered to highly weathered, medium strength END OF HAND AUGER @ 0.36 m REFUSAL GROUNDWATER NOT ENCOUNTERED BACKFILLED				
			0.5										
			1.0										
			1.5										
			2.0										

Sketch & Other Observations



This report of hand augered borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F03a
RL3



GOLDER

REPORT OF HAND AUGERED BOREHOLE: BH404

SHEET: 1 OF 1

CLIENT: Built

PROJECT: Proposed Mixed Development

LOCATION: 52 Scott Street, Liverpool

JOB NO: 19125312

COORDS: 308085 m E 6244162 m N MGA94 56 (hhGPS)

INCLINATION: -90°

HOLE DEPTH: 0.90 m

LOGGED: RAM

DATE: 10/7/19

CHECKED: BJF

DATE: 31/7/19

Drilling					Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION			MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC	M-H	GROUNDWATER NOT ENCOUNTERED	0.0		BH404/0.1E 0.10 m 1xJar, 1 xAsb, 1xPFAS R = 1A		GP	ASPHALT			M			0.02 - 0.10 m; inferred base course 0.10 - 0.90 m; trace fragments of brick, asphalt and plastic up to 30 mm in size	
			SC	FILL: Sandy GRAVEL fine to coarse grained, sub-angular, blue grey, fine to coarse grained sand											
			CL	FILL: Clayey SAND fine to coarse grained, brown, low plasticity clay, with fine to coarse grained, sub-rounded to sub-angular gravel											
			FILL: Sandy CLAY low plasticity, brown, fine to coarse grained sand, with fine to coarse grained, sub-rounded to sub-angular gravel												
HA	L-M		0.5		BH404/0.5E 0.50 m 1xJar, 1 xAsb, 1xPFAS R = 1A							w < PL			
			1.0						END OF HAND AUGER @ 0.90 m REFUSAL GROUNDWATER NOT ENCOUNTERED BACKFILLED						
			1.5												
			2.0												

Sketch & Other Observations



This report of hand augered borehole must be read in conjunction with accompanying notes and abbreviations.

GAP gINT FN. F03a
RL3

APPENDIX C

Geotechnical Laboratory Test Certificates

Uniaxial Compressive Strength			
Client:	Golder Associates	Sample Source:	BH301 11.07-11.44m
Address:	Level 8, 40 Mount Street, North Sydney, NSW 2016	Sample Description:	Sandstone
Project:	19125312 Liverpool Civic Place	Report No.:	S51306-UCS
Job No.:	S19374	Lab No.:	S51306
Test Procedure:	AS 4133.4.2.2 Determination of uniaxial compressive strength-Rock strength less than 50 MPa		
Testing Machine:	Matest 2000 kN Compression Machine	Sample Curing:	-
Sampling Method:	Sampled by Client	Date Sampled:	25/07/2019
Storage History:	Sealed	Storage Environment:	Sealed at as received moisture condition
 			
Uniaxial Compressive Strength 22 MPa			
Date Tested:	3/08/2019	Moisture Content:	2.4 %
Specimen Height:	142.7 mm	Duration of Test:	622 seconds
Average Specimen Diameter:	51.5 mm	Rate of Displacement:	< 0.1 mm/min
Failure Type: Tensile dominated			
Other Pertinent Observations:			
 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. This document shall not be reproduced, except in full.		Authorised Signatory:  Chris Lloyd	
NATA Accredited Laboratory Number: 14874		Date: 5/08/2019	
		Macquarie Geotechnical U7/8 10 Bradford Street Alexandria NSW 2015	

Uniaxial Compressive Strength			
Client:	Golder Associates	Sample Source:	BH304 13.45-13.80m
Address:	Level 8, 40 Mount Street, North Sydney, NSW 2016	Sample Description:	Sandstone
Project:	19125312 Liverpool Civic Place	Report No.:	S51307-UCS
Job No.:	S19374	Lab No.:	S51307
Test Procedure:	AS 4133.4.2.2 Determination of uniaxial compressive strength-Rock strength less than 50 MPa		
Testing Machine:	Matest 2000 kN Compression Machine	Sample Curing:	-
Sampling Method:	Sampled by Client	Date Sampled:	23/07/2019
Storage History:	Sealed	Storage Environment:	Sealed at as received moisture condition
 			
Uniaxial Compressive Strength 32 MPa			
Date Tested:	3/08/2019	Moisture Content:	2.7 %
Specimen Height:	141.8 mm	Duration of Test:	673 seconds
Average Specimen Diameter:	51.6 mm	Rate of Displacement:	< 0.1 mm/min
Failure Type:	Tensile dominated		
Other Pertinent Observations:			
 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. This document shall not be reproduced, except in full. NATA Accredited Laboratory Number: 14874 Authorised Signatory:  Chris Lloyd Date: 5/08/2019			
		Macquarie Geotechnical U7/8 10 Bradford Street Alexandria NSW 2015	

Uniaxial Compressive Strength			
Client:	Golder Associates	Sample Source:	BH305 5.54-5.82m
Address:	Level 8, 40 Mount Street, North Sydney, NSW 2016	Sample Description:	Shale
Project:	19125312 Liverpool Civic Place	Report No.:	S51308-UCS
Job No.:	S19374	Lab No.:	S51308
Test Procedure:	AS 4133.4.2.2 Determination of uniaxial compressive strength-Rock strength less than 50 MPa		
Testing Machine:	Matest 2000 kN Compression Machine	Sample Curing:	-
Sampling Method:	Sampled by Client	Date Sampled:	19/07/2019
Storage History:	Sealed	Storage Environment:	Sealed at as received moisture condition
 			
Uniaxial Compressive Strength 22 MPa			
Date Tested:	3/08/2019	Moisture Content:	3.6 %
Specimen Height:	143.7 mm	Duration of Test:	628 seconds
Average Specimen Diameter:	51.5 mm	Rate of Displacement:	< 0.1 mm/min
Failure Type:	Tensile dominated		
Other Pertinent Observations:			
 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. This document shall not be reproduced, except in full. NATA Accredited Laboratory Number: 14874 Authorised Signatory:  Chris Lloyd Date: 5/08/2019			
		Macquarie Geotechnical U7/8 10 Bradford Street Alexandria NSW 2015	

Uniaxial Compressive Strength			
Client:	Golder Associates	Sample Source:	BH307 7.48-7.70m
Address:	Level 8, 40 Mount Street, North Sydney, NSW 2016	Sample Description:	Sandstone
Project:	19125312 Liverpool Civic Place	Report No.:	S51309-UCS
Job No.:	S19374	Lab No.:	S51309
Test Procedure:	AS 4133.4.2.2 Determination of uniaxial compressive strength-Rock strength less than 50 MPa		
Testing Machine:	Matest 2000 kN Compression Machine	Sample Curing:	-
Sampling Method:	Sampled by Client	Date Sampled:	18/07/2019
Storage History:	Sealed	Storage Environment:	Sealed at as received moisture condition
 			
Uniaxial Compressive Strength 18 MPa			
Date Tested:	3/08/2019	Moisture Content:	3.9 %
Specimen Height:	143.5 mm	Duration of Test:	638 seconds
Average Specimen Diameter:	51.7 mm	Rate of Displacement:	< 0.1 mm/min
Failure Type:	Mixed mode		
Other Pertinent Observations:			
 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. This document shall not be reproduced, except in full. NATA Accredited Laboratory Number: 14874 Authorised Signatory:  Chris Lloyd Date: 5/08/2019			
		Macquarie Geotechnical U7/8 10 Bradford Street Alexandria NSW 2015	

APPENDIX D

Soil Analytical Results
D-1 Certificates of Analysis
D-2 Summary Table Analytical
Results

D-1 Certificates of Analysis

CERTIFICATE OF ANALYSIS

Work Order	: ES1924021	Page	: 1 of 67
Amendment	: (Preliminary Report)		
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Sydney
Contact	: ERIC WON	Contact	: Customer Services ES
Address	: LEVEL 1, 124 PACIFIC HIGHWAY ST LEONARDS NSW, AUSTRALIA 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 19125312	Date Samples Received	: 31-Jul-2019 11:24
Order number	: 19125312	Date Analysis Commenced	: 02-Aug-2019
C-O-C number	: ----	Issue Date	: 07-Aug-2019 16:44
Sampler	: ----		
Site	: ----		
Quote number	: EN/002/18 National BQ		
No. of samples received	: 33		
No. of samples analysed	: 33		



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
- Descriptive 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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Evie Sidarta	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

Page : 2 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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.
- EP071: Results of sample BH305 / 0.4E have been confirmed by re-extraction and re-analysis.
- 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.
- EP075: 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- ASS: EA029 (SPOCAS): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO₃) 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.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- 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.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.

(Preliminary Report)

Page : 3 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



-
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
 - EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.
-

(Preliminary Report)

Page : 4 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time					24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	----	25.8	----	----	----	----
Moisture Content	----	1.0	%	25.1	----	----	12.6	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	----	No	No
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	----	No	No
Asbestos Type	1332-21-4	-	--	----	----	-	----	-	-
Sample weight (dry)	----	0.01	g	----	----	14.8	----	38.4	38.4
APPROVED IDENTIFIER:	----	-	--	----	----	A. SMYLIE	----	A. SMYLIE	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	No	----	No	No
Organic Fibre	----	0.1	g/kg	----	----	No	----	No	No
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	12	----	----	8	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	13	----	----	10	----	----
Copper	7440-50-8	5	mg/kg	64	----	----	37	----	----
Lead	7439-92-1	5	mg/kg	285	----	----	66	----	----
Nickel	7440-02-0	2	mg/kg	8	----	----	17	----	----
Zinc	7440-66-6	5	mg/kg	392	----	----	67	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	0.1	----	----	<0.1	----	----
EN33: TCLP Leach									
Initial pH	----	0.1	pH Unit	9.4	----	----	----	----	----
After HCl pH	----	0.1	pH Unit	1.5	----	----	----	----	----
Extraction Fluid Number	----	1	-	1	----	----	----	----	----
Final pH	----	0.1	pH Unit	5.4	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	<0.5	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	----	----	<0.5	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	----	----	<0.5	----	----

(Preliminary Report)

Page : 5 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time					24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
tert-Butylbenzene	98-06-6	0.5	mg/kg		<0.5	----	----	<0.5	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg		<0.5	----	----	<0.5	----
n-Butylbenzene	104-51-8	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg		<5	----	----	<5	----
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	----	----	<5	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		<5	----	----	<5	----
2-Hexanone (MBK)	591-78-6	5	mg/kg		<5	----	----	<5	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		<5	----	----	<5	----
Chloromethane	74-87-3	5	mg/kg		<5	----	----	<5	----
Vinyl chloride	75-01-4	5	mg/kg		<5	----	----	<5	----
Bromomethane	74-83-9	5	mg/kg		<5	----	----	<5	----
Chloroethane	75-00-3	5	mg/kg		<5	----	----	<5	----
Trichlorofluoromethane	75-69-4	5	mg/kg		<5	----	----	<5	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Iodomethane	74-88-4	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Trichloroethene	79-01-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Dibromomethane	74-95-3	0.5	mg/kg		<0.5	----	----	<0.5	----

(Preliminary Report)

Page : 6 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Client sample ID

				BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time				24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	----	----	<0.5	----
1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	----	----	<0.5	----
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	----	----	<0.5	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	----	----	<0.5	----
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	----	----	<0.5	----
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	----	----	<0.5	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	----	----	<0.5	----
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	----	----	<0.5	----
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	----	----	<0.5	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	----	----	<0.5	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	----	----	<0.5	----
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	----	----	<0.5	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	----	----	<0.5	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	----	----	<0.5	----
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	----	----	<0.5	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	<0.5	----	----	<0.5	----
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	----	----	<0.5	----
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	----	----	<0.5	----
Bromoform	75-25-2	0.5	mg/kg	<0.5	----	----	<0.5	----
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	----



Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time				24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	----	
EP075A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	<0.5	----	
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	<0.5	----	
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	<0.5	----	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	<0.5	----	
Pentachlorophenol	87-86-5	1	mg/kg	<1	----	----	<1	----	
EP075B: Polynuclear Aromatic Hydrocarbons									
2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
7.12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5	----	----	<0.5	----	
3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg	<5.0	----	----	<5.0	----	
Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5	----	----	<0.5	----	
EP075D: Nitrosamines									



Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Client sample ID

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E		BH301 / 0.15E		BH301 / 0.15E		BH303 / 0.2E		BH303 / 0.2E	
Client sampling date / time					24-Jul-2019 00:00		24-Jul-2019 00:00		24-Jul-2019 00:00		15-Jul-2019 00:00		15-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-001		ES1924021-002		ES1924021-003		ES1924021-004		ES1924021-006		
				Result		Result		Result		Result		Result		
EP075D: Nitrosamines - Continued														
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5		----		----		<0.5		----		
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5		----		----		<0.5		----		
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg	<1.0		----		----		<1.0		----		
N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5		----		----		<0.5		----		
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5		----		----		<0.5		----		
N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5		----		----		<0.5		----		
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5		----		----		<0.5		----		
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg	<1.0		----		----		<1.0		----		
Methapyrilene	91-80-5	0.5	mg/kg	<0.5		----		----		<0.5		----		
EP075E: Nitroaromatics and Ketones														
2-Picoline	109-06-8	0.5	mg/kg	<0.5		----		----		<0.5		----		
Acetophenone	98-86-2	0.5	mg/kg	<0.5		----		----		<0.5		----		
Nitrobenzene	98-95-3	0.5	mg/kg	<0.5		----		----		<0.5		----		
Isophorone	78-59-1	0.5	mg/kg	<0.5		----		----		<0.5		----		
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg	<1.0		----		----		<1.0		----		
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg	<1.0		----		----		<1.0		----		
1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5		----		----		<0.5		----		
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5		----		----		<0.5		----		
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5		----		----		<0.5		----		
Azobenzene	103-33-3	1	mg/kg	<1		----		----		<1		----		
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5		----		----		<0.5		----		
Phenacetin	62-44-2	0.5	mg/kg	<0.5		----		----		<0.5		----		
4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5		----		----		<0.5		----		
Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5		----		----		<0.5		----		
Pronamide	23950-58-5	0.5	mg/kg	<0.5		----		----		<0.5		----		
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5		----		----		<0.5		----		
Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5		----		----		<0.5		----		
EP075F: Haloethers														
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	<0.5		----		----		<0.5		----		
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	<0.5		----		----		<0.5		----		
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	<0.5		----		----		<0.5		----		
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	<0.5		----		----		<0.5		----		
EP075G: Chlorinated Hydrocarbons														

(Preliminary Report)

Page : 9 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time					24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
					Result	Result	Result	Result	Result
EP075G: Chlorinated Hydrocarbons - Continued									
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg		<0.5	----	----	<0.5	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachloroethane	67-72-1	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachloropropylene	1888-71-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg		<2.5	----	----	<2.5	----
Pentachlorobenzene	608-93-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg		<1.0	----	----	<1.0	----
EP075H: Anilines and Benzidines									
Aniline	62-53-3	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Chloroaniline	106-47-8	0.5	mg/kg		<0.5	----	----	<0.5	----
2-Nitroaniline	88-74-4	1.0	mg/kg		<1.0	----	----	<1.0	----
3-Nitroaniline	99-09-2	1.0	mg/kg		<1.0	----	----	<1.0	----
Dibenzofuran	132-64-9	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Nitroaniline	100-01-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Carbazole	86-74-8	0.5	mg/kg		<0.5	----	----	<0.5	----
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg		<0.5	----	----	<0.5	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	mg/kg		<0.5	----	----	<0.5	----
beta-BHC	319-85-7	0.5	mg/kg		<0.5	----	----	<0.5	----
gamma-BHC	58-89-9	0.5	mg/kg		<0.5	----	----	<0.5	----
delta-BHC	319-86-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Heptachlor	76-44-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Aldrin	309-00-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	mg/kg		<0.5	----	----	<0.5	----
alpha-Endosulfan	959-98-8	0.5	mg/kg		<0.5	----	----	<0.5	----
4,4'-DDE	72-55-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Dieldrin	60-57-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Endrin	72-20-8	0.5	mg/kg		<0.5	----	----	<0.5	----
beta-Endosulfan	33213-65-9	0.5	mg/kg		<0.5	----	----	<0.5	----
4,4'-DDD	72-54-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	mg/kg		<0.5	----	----	<0.5	----

(Preliminary Report)

Page : 10 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time					24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
					Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued									
4,4'-DDT	50-29-3	1.0	mg/kg		<1.0	----	----	<1.0	----
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Dimethoate	60-51-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Diazinon	333-41-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg		<0.5	----	----	<0.5	----
Malathion	121-75-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Fenthion	55-38-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorpyrifos	2921-88-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Pirimphos-ethyl	23505-41-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorfenvinphos	470-90-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Prothiofos	34643-46-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Ethion	563-12-2	0.5	mg/kg		<0.5	----	----	<0.5	----
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	----
^ 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	----



Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time				24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006	
				Result	Result	Result	Result	Result	
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	<0.5	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	<0.2	----	
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	<0.5	----	
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	----	----	----	
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)	335-77-3	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 (PFTTrDA)	72629-94-8	0.0002	mg/kg	----	<0.0002	----	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	----	<0.0005	----	----	----	
EP231C: Perfluoroalkyl Sulfonamides									

(Preliminary Report)

Page : 12 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time					24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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)	24448-09-7	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	----	----	----
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	355-46-4/1763-23-1	0.0002	mg/kg		----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		----	<0.0002	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		94.6	----	----	90.5	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		95.2	----	----	102	----
Toluene-D8	2037-26-5	0.5	%		102	----	----	109	----

(Preliminary Report)

Page : 13 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time					24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.5	%		88.7	----	----	90.9	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		81.9	----	----	79.9	----
2-Chlorophenol-D4	93951-73-6	0.5	%		86.6	----	----	86.3	----
2,4,6-Tribromophenol	118-79-6	0.5	%		65.0	----	----	66.7	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		93.4	----	----	91.6	----
Anthracene-d10	1719-06-8	0.5	%		93.9	----	----	91.5	----
4-Terphenyl-d14	1718-51-0	0.5	%		95.7	----	----	95.0	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		95.6	----	----	96.2	----
Phenol-d6	13127-88-3	0.5	%		90.7	----	----	98.2	----
2-Chlorophenol-D4	93951-73-6	0.5	%		95.0	----	----	106	----
2,4,6-Tribromophenol	118-79-6	0.5	%		73.3	----	----	81.8	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		82.9	----	----	90.8	----
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		95.6	----	----	99.7	----
2-Fluorobiphenyl	321-60-8	0.5	%		124	----	----	125	----
Anthracene-d10	1719-06-8	0.5	%		96.1	----	----	93.6	----
4-Terphenyl-d14	1718-51-0	0.5	%		122	----	----	120	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		93.7	----	----	100	----
Toluene-D8	2037-26-5	0.2	%		80.9	----	----	86.4	----
4-Bromofluorobenzene	460-00-4	0.2	%		84.3	----	----	87.3	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	77.5	----	----	----
13C8-PFOA	----	0.0002	%		----	78.5	----	----	----

(Preliminary Report)

Page : 14 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-011	ES1924021-012
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	----	15.1	----	----	----	13.1
Moisture Content	----	1.0	%	16.7	----	----	13.5	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	----	----	----
Asbestos Type	1332-21-4	-	--	----	----	-	----	----	----
Sample weight (dry)	----	0.01	g	----	----	17.0	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	A. SMYLIE	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	No	----	----	----
Organic Fibre	----	0.1	g/kg	----	----	No	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	12	----	----	6	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	14	----	----	10	----	----
Copper	7440-50-8	5	mg/kg	22	----	----	12	----	----
Lead	7439-92-1	5	mg/kg	17	----	----	43	----	----
Nickel	7440-02-0	2	mg/kg	10	----	----	24	----	----
Zinc	7440-66-6	5	mg/kg	43	----	----	49	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	<0.1	----	----
EN33: TCLP Leach									
Initial pH	----	0.1	pH Unit	----	----	----	8.4	----	----
After HCl pH	----	0.1	pH Unit	----	----	----	1.3	----	----
Extraction Fluid Number	----	1	-	----	----	----	1	----	----
Final pH	----	0.1	pH Unit	----	----	----	5.0	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	<0.5	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	----	----	<0.5	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	----	----	<0.5	----	----

(Preliminary Report)

Page : 15 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-011	ES1924021-012
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
tert-Butylbenzene	98-06-6	0.5	mg/kg		<0.5	----	----	<0.5	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg		<0.5	----	----	<0.5	----
n-Butylbenzene	104-51-8	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg		<5	----	----	<5	----
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	----	----	<5	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		<5	----	----	<5	----
2-Hexanone (MBK)	591-78-6	5	mg/kg		<5	----	----	<5	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		<5	----	----	<5	----
Chloromethane	74-87-3	5	mg/kg		<5	----	----	<5	----
Vinyl chloride	75-01-4	5	mg/kg		<5	----	----	<5	----
Bromomethane	74-83-9	5	mg/kg		<5	----	----	<5	----
Chloroethane	75-00-3	5	mg/kg		<5	----	----	<5	----
Trichlorofluoromethane	75-69-4	5	mg/kg		<5	----	----	<5	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Iodomethane	74-88-4	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Trichloroethene	79-01-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Dibromomethane	74-95-3	0.5	mg/kg		<0.5	----	----	<0.5	----

(Preliminary Report)

Page : 16 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-011	ES1924021-012
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1.3-Dichloropropane	142-28-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Tetrachloroethene	127-18-4	0.5	mg/kg		<0.5	----	----	<0.5	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Pentachloroethane	76-01-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Bromobenzene	108-86-1	0.5	mg/kg		<0.5	----	----	<0.5	----
2-Chlorotoluene	95-49-8	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Chlorotoluene	106-43-4	0.5	mg/kg		<0.5	----	----	<0.5	----
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Bromodichloromethane	75-27-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Dibromochloromethane	124-48-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Bromoform	75-25-2	0.5	mg/kg		<0.5	----	----	<0.5	----
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	----	----	0.7	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	0.7	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	10.1	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	3.8	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	15.2	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	16.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	14.4	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	13.0	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	18.3	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	6.7	----

Page : 17 of 67
Work Order : ES1924021
Client : GOLDER
Project : 19125312

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Client sample ID

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID		BH304 / 0.7E		BH304 / 0.7E		BH304 / 0.7E		BH305 / 0.4E		BH305 / 0.4E	
Client sampling date / time				11-Jul-2019 00:00		11-Jul-2019 00:00		11-Jul-2019 00:00		20-Jul-2019 00:00		20-Jul-2019 00:00			
Compound	CAS Number	LOR	Unit	ES1924021-007		ES1924021-008		ES1924021-009		ES1924021-011		ES1924021-012			
				Result		Result		Result		Result		Result			
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued															
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5		----		----		17.5		----			
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5		----		----		8.0		----			
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5		----		----		2.7		----			
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5		----		----		10.2		----			
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5		----		----		138		----			
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5		----		----		25.2		----			
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6		----		----		25.2		----			
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2		----		----		25.2		----			
EP075A: Phenolic Compounds															
Phenol	108-95-2	0.5	mg/kg	<0.5		----		----		<0.5		----			
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5		----		----		<0.5		----			
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5		----		----		<0.5		----			
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5		----		----		<0.5		----			
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5		----		----		<0.5		----			
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5		----		----		<0.5		----			
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5		----		----		<0.5		----			
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5		----		----		<0.5		----			
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5		----		----		<0.5		----			
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5		----		----		<0.5		----			
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5		----		----		<0.5		----			
Pentachlorophenol	87-86-5	1	mg/kg	<1		----		----		<1		----			
EP075B: Polynuclear Aromatic Hydrocarbons															
2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5		----		----		<0.5		----			
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5		----		----		<0.5		----			
7.12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5		----		----		<0.5		----			
3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5		----		----		<0.5		----			
EP075C: Phthalate Esters															
Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5		----		----		<0.5		----			
Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5		----		----		<0.5		----			
Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5		----		----		<0.5		----			
Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5		----		----		<0.5		----			
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg	<5.0		----		----		<5.0		----			
Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5		----		----		<0.5		----			
EP075D: Nitrosamines															

EP075G: Chlorinated Hydrocarbons

(Preliminary Report)

Page : 19 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-011	ES1924021-012
					Result	Result	Result	Result	Result
EP075G: Chlorinated Hydrocarbons - Continued									
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg		<0.5	----	----	<0.5	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachloroethane	67-72-1	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachloropropylene	1888-71-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg		<2.5	----	----	<2.5	----
Pentachlorobenzene	608-93-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg		<1.0	----	----	<1.0	----
EP075H: Anilines and Benzidines									
Aniline	62-53-3	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Chloroaniline	106-47-8	0.5	mg/kg		<0.5	----	----	<0.5	----
2-Nitroaniline	88-74-4	1.0	mg/kg		<1.0	----	----	<1.0	----
3-Nitroaniline	99-09-2	1.0	mg/kg		<1.0	----	----	<1.0	----
Dibenzofuran	132-64-9	0.5	mg/kg		<0.5	----	----	0.6	----
4-Nitroaniline	100-01-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Carbazole	86-74-8	0.5	mg/kg		<0.5	----	----	1.5	----
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg		<0.5	----	----	<0.5	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	mg/kg		<0.5	----	----	<0.5	----
beta-BHC	319-85-7	0.5	mg/kg		<0.5	----	----	<0.5	----
gamma-BHC	58-89-9	0.5	mg/kg		<0.5	----	----	<0.5	----
delta-BHC	319-86-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Heptachlor	76-44-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Aldrin	309-00-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	mg/kg		<0.5	----	----	<0.5	----
alpha-Endosulfan	959-98-8	0.5	mg/kg		<0.5	----	----	<0.5	----
4,4'-DDE	72-55-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Dieldrin	60-57-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Endrin	72-20-8	0.5	mg/kg		<0.5	----	----	<0.5	----
beta-Endosulfan	33213-65-9	0.5	mg/kg		<0.5	----	----	<0.5	----
4,4'-DDD	72-54-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	mg/kg		<0.5	----	----	<0.5	----

(Preliminary Report)

Page : 20 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-011	ES1924021-012
					Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued									
4,4'-DDT	50-29-3	1.0	mg/kg		<1.0	----	----	<1.0	----
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Dimethoate	60-51-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Diazinon	333-41-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg		<0.5	----	----	<0.5	----
Malathion	121-75-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Fenthion	55-38-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorpyrifos	2921-88-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Pirimphos-ethyl	23505-41-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorfenvinphos	470-90-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Prothiofos	34643-46-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Ethion	563-12-2	0.5	mg/kg		<0.5	----	----	<0.5	----
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	----	----	460	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	480	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	940	----
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	----	----	830	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	240	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	1070	----
^ >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	----



Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E	BH305 / 0.4E
Client sampling date / time				11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00	20-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-011	ES1924021-012	
				Result	Result	Result	Result	Result	
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	<0.5	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	<0.2	----	
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	<0.5	----	
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	----	<0.0002	----	----	<0.0002	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	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 (PFTTrDA)	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									

(Preliminary Report)

Page : 22 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-011	ES1924021-012
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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)	24448-09-7	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
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	355-46-4/1763-23-1	0.0002	mg/kg		----	<0.0002	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		----	<0.0002	----	----	<0.0002
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		94.5	----	----	71.5	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		98.6	----	----	105	----
Toluene-D8	2037-26-5	0.5	%		108	----	----	89.2	----

(Preliminary Report)

Page : 23 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-011	ES1924021-012
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.5	%		93.5	----	----	89.0	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		81.2	----	----	81.0	----
2-Chlorophenol-D4	93951-73-6	0.5	%		87.8	----	----	87.9	----
2,4,6-Tribromophenol	118-79-6	0.5	%		67.0	----	----	76.2	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		94.2	----	----	95.6	----
Anthracene-d10	1719-06-8	0.5	%		94.5	----	----	90.4	----
4-Terphenyl-d14	1718-51-0	0.5	%		96.8	----	----	101	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		98.5	----	----	102	----
Phenol-d6	13127-88-3	0.5	%		90.2	----	----	95.7	----
2-Chlorophenol-D4	93951-73-6	0.5	%		101	----	----	103	----
2,4,6-Tribromophenol	118-79-6	0.5	%		53.2	----	----	99.1	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		97.2	----	----	88.7	----
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		98.6	----	----	102	----
2-Fluorobiphenyl	321-60-8	0.5	%		120	----	----	119	----
Anthracene-d10	1719-06-8	0.5	%		95.1	----	----	87.4	----
4-Terphenyl-d14	1718-51-0	0.5	%		121	----	----	108	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		97.4	----	----	106	----
Toluene-D8	2037-26-5	0.2	%		85.2	----	----	94.0	----
4-Bromofluorobenzene	460-00-4	0.2	%		86.7	----	----	96.2	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	86.5	----	----	98.0
13C8-PFOA	----	0.0002	%		----	72.5	----	----	106

(Preliminary Report)

Page : 24 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 1.5E
Client sampling date / time					20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016	ES1924021-017
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		----	----	13.4	----	----
Moisture Content	----	1.0	%		----	8.0	----	----	14.6
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	----	Yes	----
Asbestos (Trace)	1332-21-4	5	Fibres		No	----	----	No	----
Asbestos Type	1332-21-4	-	--		-	----	----	Ch + Am + Cr	----
Sample weight (dry)	----	0.01	g		26.6	----	----	52.2	----
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	----	----	A. SMYLIE	----
Synthetic Mineral Fibre	----	0.1	g/kg		No	----	----	No	----
Organic Fibre	----	0.1	g/kg		No	----	----	No	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	<5	----	----	5
Cadmium	7440-43-9	1	mg/kg		----	<1	----	----	<1
Chromium	7440-47-3	2	mg/kg		----	75	----	----	5
Copper	7440-50-8	5	mg/kg		----	48	----	----	57
Lead	7439-92-1	5	mg/kg		----	205	----	----	17
Nickel	7440-02-0	2	mg/kg		----	76	----	----	7
Zinc	7440-66-6	5	mg/kg		----	217	----	----	52
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	0.2	----	----	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	<0.1	----	----	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg		----	<0.5	----	----	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg		----	<0.5	----	----	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg		----	<0.5	----	----	<0.5
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg		----	<0.5	----	----	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg		----	<0.5	----	----	<0.5
tert-Butylbenzene	98-06-6	0.5	mg/kg		----	<0.5	----	----	<0.5
p-Isopropyltoluene	99-87-6	0.5	mg/kg		----	<0.5	----	----	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg		----	<0.5	----	----	<0.5
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg		----	<5	----	----	<5

(Preliminary Report)

Page : 25 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 1.5E
Client sampling date / time					20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016	ES1924021-017
					Result	Result	Result	Result	Result
EP074B: Oxygenated Compounds - Continued									
2-Butanone (MEK)	78-93-3	5	mg/kg		----	<5	----	----	<5
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		----	<5	----	----	<5
2-Hexanone (MBK)	591-78-6	5	mg/kg		----	<5	----	----	<5
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		----	<0.5	----	----	<0.5
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2-Dichloropropane	78-87-5	0.5	mg/kg		----	<0.5	----	----	<0.5
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		----	<0.5	----	----	<0.5
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		----	<0.5	----	----	<0.5
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		----	<5	----	----	<5
Chloromethane	74-87-3	5	mg/kg		----	<5	----	----	<5
Vinyl chloride	75-01-4	5	mg/kg		----	<5	----	----	<5
Bromomethane	74-83-9	5	mg/kg		----	<5	----	----	<5
Chloroethane	75-00-3	5	mg/kg		----	<5	----	----	<5
Trichlorofluoromethane	75-69-4	5	mg/kg		----	<5	----	----	<5
1,1-Dichloroethene	75-35-4	0.5	mg/kg		----	<0.5	----	----	<0.5
Iodomethane	74-88-4	0.5	mg/kg		----	<0.5	----	----	<0.5
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		----	<0.5	----	----	<0.5
1,1-Dichloroethane	75-34-3	0.5	mg/kg		----	<0.5	----	----	<0.5
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		----	<0.5	----	----	<0.5
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		----	<0.5	----	----	<0.5
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		----	<0.5	----	----	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2-Dichloroethane	107-06-2	0.5	mg/kg		----	<0.5	----	----	<0.5
Trichloroethene	79-01-6	0.5	mg/kg		----	<0.5	----	----	<0.5
Dibromomethane	74-95-3	0.5	mg/kg		----	<0.5	----	----	<0.5
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		----	<0.5	----	----	<0.5
1,3-Dichloropropane	142-28-9	0.5	mg/kg		----	<0.5	----	----	<0.5
Tetrachloroethene	127-18-4	0.5	mg/kg		----	<0.5	----	----	<0.5
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	<0.5	----	----	<0.5
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg		----	<0.5	----	----	<0.5

(Preliminary Report)

Page : 26 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 1.5E
Client sampling date / time					20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016	ES1924021-017
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		----	<0.5	----	----	<0.5
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg		----	<0.5	----	----	<0.5
Pentachloroethane	76-01-7	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg		----	<0.5	----	----	<0.5
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		----	<0.5	----	----	<0.5
Bromobenzene	108-86-1	0.5	mg/kg		----	<0.5	----	----	<0.5
2-Chlorotoluene	95-49-8	0.5	mg/kg		----	<0.5	----	----	<0.5
4-Chlorotoluene	106-43-4	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg		----	<0.5	----	----	<0.5
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		----	<0.5	----	----	<0.5
Bromodichloromethane	75-27-4	0.5	mg/kg		----	<0.5	----	----	<0.5
Dibromochloromethane	124-48-1	0.5	mg/kg		----	<0.5	----	----	<0.5
Bromoform	75-25-2	0.5	mg/kg		----	<0.5	----	----	<0.5
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

(Preliminary Report)

Page : 27 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 1.5E
Client sampling date / time					20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016	ES1924021-017
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ 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
EP075A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	<0.5	----	----	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg		----	<0.5	----	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg		----	<0.5	----	----	<0.5
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg		----	<0.5	----	----	<0.5
2-Nitrophenol	88-75-5	0.5	mg/kg		----	<0.5	----	----	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg		----	<0.5	----	----	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg		----	<0.5	----	----	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg		----	<0.5	----	----	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	<0.5	----	----	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		----	<0.5	----	----	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		----	<0.5	----	----	<0.5
Pentachlorophenol	87-86-5	1	mg/kg		----	<1	----	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
2-Methylnaphthalene	91-57-6	0.5	mg/kg		----	<0.5	----	----	<0.5
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg		----	<0.5	----	----	<0.5
7,12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg		----	<0.5	----	----	<0.5
3-Methylcholanthrene	56-49-5	0.5	mg/kg		----	<0.5	----	----	<0.5
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	0.5	mg/kg		----	<0.5	----	----	<0.5
Diethyl phthalate	84-66-2	0.5	mg/kg		----	<0.5	----	----	<0.5
Di-n-butyl phthalate	84-74-2	0.5	mg/kg		----	<0.5	----	----	<0.5
Butyl benzyl phthalate	85-68-7	0.5	mg/kg		----	<0.5	----	----	<0.5
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg		----	<5.0	----	----	<5.0
Di-n-octylphthalate	117-84-0	0.5	mg/kg		----	<0.5	----	----	<0.5
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg		----	<0.5	----	----	<0.5
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg		----	<0.5	----	----	<0.5
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg		----	<1.0	----	----	<1.0
N-Nitrosomorpholine	59-89-2	0.5	mg/kg		----	<0.5	----	----	<0.5
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg		----	<0.5	----	----	<0.5

(Preliminary Report)

Page : 28 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 1.5E
Client sampling date / time					20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016	ES1924021-017
					Result	Result	Result	Result	Result
EP075D: Nitrosamines - Continued									
N-Nitrosopiperidine	100-75-4	0.5	mg/kg		----	<0.5	----	----	<0.5
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg		----	<0.5	----	----	<0.5
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg		----	<1.0	----	----	<1.0
Methapyrilene	91-80-5	0.5	mg/kg		----	<0.5	----	----	<0.5
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	0.5	mg/kg		----	<0.5	----	----	<0.5
Acetophenone	98-86-2	0.5	mg/kg		----	<0.5	----	----	<0.5
Nitrobenzene	98-95-3	0.5	mg/kg		----	<0.5	----	----	<0.5
Isophorone	78-59-1	0.5	mg/kg		----	<0.5	----	----	<0.5
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg		----	<1.0	----	----	<1.0
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg		----	<1.0	----	----	<1.0
1-Naphthylamine	134-32-7	0.5	mg/kg		----	<0.5	----	----	<0.5
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg		----	<0.5	----	----	<0.5
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg		----	<0.5	----	----	<0.5
Azobenzene	103-33-3	1	mg/kg		----	<1	----	----	<1
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg		----	<0.5	----	----	<0.5
Phenacetin	62-44-2	0.5	mg/kg		----	<0.5	----	----	<0.5
4-Aminobiphenyl	92-67-1	0.5	mg/kg		----	<0.5	----	----	<0.5
Pentachloronitrobenzene	82-68-8	0.5	mg/kg		----	<0.5	----	----	<0.5
Pronamide	23950-58-5	0.5	mg/kg		----	<0.5	----	----	<0.5
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg		----	<0.5	----	----	<0.5
Chlorobenzilate	510-15-6	0.5	mg/kg		----	<0.5	----	----	<0.5
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg		----	<0.5	----	----	<0.5
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg		----	<0.5	----	----	<0.5
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg		----	<0.5	----	----	<0.5
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg		----	<0.5	----	----	<0.5
EP075G: Chlorinated Hydrocarbons									
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg		----	<0.5	----	----	<0.5
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg		----	<0.5	----	----	<0.5
Hexachloroethane	67-72-1	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg		----	<0.5	----	----	<0.5

(Preliminary Report)

Page : 29 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 1.5E
Client sampling date / time					20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016	ES1924021-017
					Result	Result	Result	Result	Result
EP075G: Chlorinated Hydrocarbons - Continued									
Hexachloropropylene	1888-71-7	0.5	mg/kg		----	<0.5	----	----	<0.5
Hexachlorobutadiene	87-68-3	0.5	mg/kg		----	<0.5	----	----	<0.5
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg		----	<2.5	----	----	<2.5
Pentachlorobenzene	608-93-5	0.5	mg/kg		----	<0.5	----	----	<0.5
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg		----	<1.0	----	----	<1.0
EP075H: Anilines and Benzidines									
Aniline	62-53-3	0.5	mg/kg		----	<0.5	----	----	<0.5
4-Chloroaniline	106-47-8	0.5	mg/kg		----	<0.5	----	----	<0.5
2-Nitroaniline	88-74-4	1.0	mg/kg		----	<1.0	----	----	<1.0
3-Nitroaniline	99-09-2	1.0	mg/kg		----	<1.0	----	----	<1.0
Dibenzofuran	132-64-9	0.5	mg/kg		----	<0.5	----	----	<0.5
4-Nitroaniline	100-01-6	0.5	mg/kg		----	<0.5	----	----	<0.5
Carbazole	86-74-8	0.5	mg/kg		----	<0.5	----	----	<0.5
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg		----	<0.5	----	----	<0.5
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	mg/kg		----	<0.5	----	----	<0.5
beta-BHC	319-85-7	0.5	mg/kg		----	<0.5	----	----	<0.5
gamma-BHC	58-89-9	0.5	mg/kg		----	<0.5	----	----	<0.5
delta-BHC	319-86-8	0.5	mg/kg		----	<0.5	----	----	<0.5
Heptachlor	76-44-8	0.5	mg/kg		----	<0.5	----	----	<0.5
Aldrin	309-00-2	0.5	mg/kg		----	<0.5	----	----	<0.5
Heptachlor epoxide	1024-57-3	0.5	mg/kg		----	<0.5	----	----	<0.5
alpha-Endosulfan	959-98-8	0.5	mg/kg		----	<0.5	----	----	<0.5
4,4'-DDE	72-55-9	0.5	mg/kg		----	<0.5	----	----	<0.5
Dieldrin	60-57-1	0.5	mg/kg		----	<0.5	----	----	<0.5
Endrin	72-20-8	0.5	mg/kg		----	<0.5	----	----	<0.5
beta-Endosulfan	33213-65-9	0.5	mg/kg		----	<0.5	----	----	<0.5
4,4'-DDD	72-54-8	0.5	mg/kg		----	<0.5	----	----	<0.5
Endosulfan sulfate	1031-07-8	0.5	mg/kg		----	<0.5	----	----	<0.5
4,4'-DDT	50-29-3	1.0	mg/kg		----	<1.0	----	----	<1.0
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	0.5	mg/kg		----	<0.5	----	----	<0.5
Dimethoate	60-51-5	0.5	mg/kg		----	<0.5	----	----	<0.5
Diazinon	333-41-5	0.5	mg/kg		----	<0.5	----	----	<0.5

Page : 30 of 67
Work Order : ES1924021
Client : GOLDER
Project : 19125312

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Client sample ID

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 1.5E
Client sampling date / time					20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016	ES1924021-017
					Result	Result	Result	Result	Result

EP075J: Organophosphorus Pesticides - Continued

Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	----	<0.5	----	----	<0.5
Malathion	121-75-5	0.5	mg/kg	----	<0.5	----	----	<0.5
Fenthion	55-38-9	0.5	mg/kg	----	<0.5	----	----	<0.5
Chlorpyrifos	2921-88-2	0.5	mg/kg	----	<0.5	----	----	<0.5
Pirimphos-ethyl	23505-41-1	0.5	mg/kg	----	<0.5	----	----	<0.5
Chlorfenvinphos	470-90-6	0.5	mg/kg	----	<0.5	----	----	<0.5
Prothiofos	34643-46-4	0.5	mg/kg	----	<0.5	----	----	<0.5
Ethion	563-12-2	0.5	mg/kg	----	<0.5	----	----	<0.5

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
[^] C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	<50

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

E1: C6-C10 Total Recoverable Hydrocarbons - NEL M-2-10 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
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	<0.2
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	----	----	<0.5
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	<1

EP231A: Perfluoroalkyl Sulfonic Acids

(Preliminary Report)

Page : 31 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 1.5E
Client sampling date / time					20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016	ES1924021-017
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
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		----	----	0.0006	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	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		----	----	0.0004	----	----
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	----	----



Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 1.5E
Client sampling date / time				20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016	ES1924021-017	
				Result	Result	Result	Result	Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	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	----	----	
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	----	----	0.0010	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	----	----	0.0006	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	0.0010	----	----	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	82.8	----	----	84.3	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	----	103	----	----	90.6	
Toluene-D8	2037-26-5	0.5	%	----	113	----	----	95.1	
4-Bromofluorobenzene	460-00-4	0.5	%	----	98.2	----	----	85.5	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	----	82.3	----	----	85.7	
2-Chlorophenol-D4	93951-73-6	0.5	%	----	88.0	----	----	91.8	
2,4,6-Tribromophenol	118-79-6	0.5	%	----	71.6	----	----	72.6	
EP075(SIM)T: PAH Surrogates									

(Preliminary Report)

Page : 33 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 1.5E
Client sampling date / time					20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016	ES1924021-017
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.5	%		----	93.7	----	----	97.9
Anthracene-d10	1719-06-8	0.5	%		----	92.8	----	----	101
4-Terphenyl-d14	1718-51-0	0.5	%		----	96.8	----	----	102
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		----	100	----	----	101
Phenol-d6	13127-88-3	0.5	%		----	97.4	----	----	89.5
2-Chlorophenol-D4	93951-73-6	0.5	%		----	102	----	----	95.2
2,4,6-Tribromophenol	118-79-6	0.5	%		----	81.5	----	----	66.1
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		----	90.4	----	----	84.8
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		----	96.9	----	----	94.6
2-Fluorobiphenyl	321-60-8	0.5	%		----	119	----	----	118
Anthracene-d10	1719-06-8	0.5	%		----	95.1	----	----	94.2
4-Terphenyl-d14	1718-51-0	0.5	%		----	117	----	----	114
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	101	----	----	89.1
Toluene-D8	2037-26-5	0.2	%		----	89.4	----	----	75.0
4-Bromofluorobenzene	460-00-4	0.2	%		----	94.0	----	----	80.4
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	----	93.5	----	----
13C8-PFOA	----	0.0002	%		----	----	88.5	----	----

(Preliminary Report)

Page : 34 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E
Client sampling date / time					09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-018	ES1924021-020	ES1924021-021	ES1924021-022	ES1924021-024
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		15.2	----	16.3	----	----
Moisture Content	----	1.0	%		----	16.3	----	----	19.4
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	----	No	----
Asbestos (Trace)	1332-21-4	5	Fibres		----	----	----	No	----
Asbestos Type	1332-21-4	-	--		----	----	----	-	----
Sample weight (dry)	----	0.01	g		----	----	----	43.1	----
APPROVED IDENTIFIER:	----	-	--		----	----	----	A. SMYLLIE	----
Synthetic Mineral Fibre	----	0.1	g/kg		----	----	----	No	----
Organic Fibre	----	0.1	g/kg		----	----	----	No	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	15	----	----	12
Cadmium	7440-43-9	1	mg/kg		----	<1	----	----	<1
Chromium	7440-47-3	2	mg/kg		----	14	----	----	18
Copper	7440-50-8	5	mg/kg		----	18	----	----	26
Lead	7439-92-1	5	mg/kg		----	12	----	----	15
Nickel	7440-02-0	2	mg/kg		----	6	----	----	9
Zinc	7440-66-6	5	mg/kg		----	28	----	----	36
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	<0.1	----	----	<0.1
EN33: TCLP Leach									
Initial pH	----	0.1	pH Unit		----	7.1	----	----	----
After HCl pH	----	0.1	pH Unit		----	1.3	----	----	----
Extraction Fluid Number	----	1	-		----	1	----	----	----
Final pH	----	0.1	pH Unit		----	5.0	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	<0.1	----	----	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg		----	<0.5	----	----	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg		----	<0.5	----	----	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg		----	<0.5	----	----	<0.5
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg		----	<0.5	----	----	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg		----	<0.5	----	----	<0.5

(Preliminary Report)

Page : 35 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E
Client sampling date / time					09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-018	ES1924021-020	ES1924021-021	ES1924021-022	ES1924021-024
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
tert-Butylbenzene	98-06-6	0.5	mg/kg		----	<0.5	----	----	<0.5
p-Isopropyltoluene	99-87-6	0.5	mg/kg		----	<0.5	----	----	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg		----	<0.5	----	----	<0.5
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg		----	<5	----	----	<5
2-Butanone (MEK)	78-93-3	5	mg/kg		----	<5	----	----	<5
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		----	<5	----	----	<5
2-Hexanone (MBK)	591-78-6	5	mg/kg		----	<5	----	----	<5
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		----	<0.5	----	----	<0.5
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2-Dichloropropane	78-87-5	0.5	mg/kg		----	<0.5	----	----	<0.5
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		----	<0.5	----	----	<0.5
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		----	<0.5	----	----	<0.5
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		----	<5	----	----	<5
Chloromethane	74-87-3	5	mg/kg		----	<5	----	----	<5
Vinyl chloride	75-01-4	5	mg/kg		----	<5	----	----	<5
Bromomethane	74-83-9	5	mg/kg		----	<5	----	----	<5
Chloroethane	75-00-3	5	mg/kg		----	<5	----	----	<5
Trichlorofluoromethane	75-69-4	5	mg/kg		----	<5	----	----	<5
1,1-Dichloroethene	75-35-4	0.5	mg/kg		----	<0.5	----	----	<0.5
Iodomethane	74-88-4	0.5	mg/kg		----	<0.5	----	----	<0.5
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		----	<0.5	----	----	<0.5
1,1-Dichloroethane	75-34-3	0.5	mg/kg		----	<0.5	----	----	<0.5
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		----	<0.5	----	----	<0.5
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		----	<0.5	----	----	<0.5
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		----	<0.5	----	----	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2-Dichloroethane	107-06-2	0.5	mg/kg		----	<0.5	----	----	<0.5
Trichloroethene	79-01-6	0.5	mg/kg		----	<0.5	----	----	<0.5
Dibromomethane	74-95-3	0.5	mg/kg		----	<0.5	----	----	<0.5

(Preliminary Report)

Page : 36 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E
Client sampling date / time					09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-018	ES1924021-020	ES1924021-021	ES1924021-022	ES1924021-024
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg		----	<0.5	----	----	<0.5
1.3-Dichloropropane	142-28-9	0.5	mg/kg		----	<0.5	----	----	<0.5
Tetrachloroethene	127-18-4	0.5	mg/kg		----	<0.5	----	----	<0.5
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	<0.5	----	----	<0.5
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg		----	<0.5	----	----	<0.5
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		----	<0.5	----	----	<0.5
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg		----	<0.5	----	----	<0.5
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg		----	<0.5	----	----	<0.5
Pentachloroethane	76-01-7	0.5	mg/kg		----	<0.5	----	----	<0.5
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg		----	<0.5	----	----	<0.5
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		----	<0.5	----	----	<0.5
Bromobenzene	108-86-1	0.5	mg/kg		----	<0.5	----	----	<0.5
2-Chlorotoluene	95-49-8	0.5	mg/kg		----	<0.5	----	----	<0.5
4-Chlorotoluene	106-43-4	0.5	mg/kg		----	<0.5	----	----	<0.5
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg		----	<0.5	----	----	<0.5
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		----	<0.5	----	----	<0.5
Bromodichloromethane	75-27-4	0.5	mg/kg		----	<0.5	----	----	<0.5
Dibromochloromethane	124-48-1	0.5	mg/kg		----	<0.5	----	----	<0.5
Bromoform	75-25-2	0.5	mg/kg		----	<0.5	----	----	<0.5
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

Page : 37 of 67
Work Order : ES1924021
Client : GOLDER
Project : 19125312

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Client sample ID

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E
Client sampling date / time				09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-018	ES1924021-020	ES1924021-021	ES1924021-022	ES1924021-024	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	
EP075A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg	----	<0.5	----	----	<0.5	
2-Chlorophenol	95-57-8	0.5	mg/kg	----	<0.5	----	----	<0.5	
2-Methylphenol	95-48-7	0.5	mg/kg	----	<0.5	----	----	<0.5	
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	----	<0.5	----	----	<0.5	
2-Nitrophenol	88-75-5	0.5	mg/kg	----	<0.5	----	----	<0.5	
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	<0.5	----	----	<0.5	
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	<0.5	----	----	<0.5	
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	<0.5	----	----	<0.5	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	<0.5	----	----	<0.5	
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	<0.5	----	----	<0.5	
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	<0.5	----	----	<0.5	
Pentachlorophenol	87-86-5	1	mg/kg	----	<1	----	----	<1	
EP075B: Polynuclear Aromatic Hydrocarbons									
2-Methylnaphthalene	91-57-6	0.5	mg/kg	----	<0.5	----	----	<0.5	
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	----	<0.5	----	----	<0.5	
7.12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	----	<0.5	----	----	<0.5	
3-Methylcholanthrene	56-49-5	0.5	mg/kg	----	<0.5	----	----	<0.5	
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	0.5	mg/kg	----	<0.5	----	----	<0.5	
Diethyl phthalate	84-66-2	0.5	mg/kg	----	<0.5	----	----	<0.5	
Di-n-butyl phthalate	84-74-2	0.5	mg/kg	----	<0.5	----	----	<0.5	
Butyl benzyl phthalate	85-68-7	0.5	mg/kg	----	<0.5	----	----	<0.5	
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg	----	<5.0	----	----	<5.0	
Di-n-octylphthalate	117-84-0	0.5	mg/kg	----	<0.5	----	----	<0.5	
EP075D: Nitrosamines									



Sub-Matrix: **SOIL** Client sample ID
 (Matrix: **SOIL**)

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E
Client sampling date / time				09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-018	ES1924021-020	ES1924021-021	ES1924021-022	ES1924021-024	
				Result	Result	Result	Result	Result	
EP075D: Nitrosamines - Continued									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	----	<0.5	----	----	<0.5	
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	----	<0.5	----	----	<0.5	
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg	----	<1.0	----	----	<1.0	
N-Nitrosomorpholine	59-89-2	0.5	mg/kg	----	<0.5	----	----	<0.5	
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	----	<0.5	----	----	<0.5	
N-Nitrosopiperidine	100-75-4	0.5	mg/kg	----	<0.5	----	----	<0.5	
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	----	<0.5	----	----	<0.5	
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg	----	<1.0	----	----	<1.0	
Methapyrilene	91-80-5	0.5	mg/kg	----	<0.5	----	----	<0.5	
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	0.5	mg/kg	----	<0.5	----	----	<0.5	
Acetophenone	98-86-2	0.5	mg/kg	----	<0.5	----	----	<0.5	
Nitrobenzene	98-95-3	0.5	mg/kg	----	<0.5	----	----	<0.5	
Isophorone	78-59-1	0.5	mg/kg	----	<0.5	----	----	<0.5	
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg	----	<1.0	----	----	<1.0	
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg	----	<1.0	----	----	<1.0	
1-Naphthylamine	134-32-7	0.5	mg/kg	----	<0.5	----	----	<0.5	
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	----	<0.5	----	----	<0.5	
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	----	<0.5	----	----	<0.5	
Azobenzene	103-33-3	1	mg/kg	----	<1	----	----	<1	
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	----	<0.5	----	----	<0.5	
Phenacetin	62-44-2	0.5	mg/kg	----	<0.5	----	----	<0.5	
4-Aminobiphenyl	92-67-1	0.5	mg/kg	----	<0.5	----	----	<0.5	
Pentachloronitrobenzene	82-68-8	0.5	mg/kg	----	<0.5	----	----	<0.5	
Pronamide	23950-58-5	0.5	mg/kg	----	<0.5	----	----	<0.5	
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	----	<0.5	----	----	<0.5	
Chlorobenzilate	510-15-6	0.5	mg/kg	----	<0.5	----	----	<0.5	
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	----	<0.5	----	----	<0.5	
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	----	<0.5	----	----	<0.5	
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	----	<0.5	----	----	<0.5	
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	----	<0.5	----	----	<0.5	
EP075G: Chlorinated Hydrocarbons									

(Preliminary Report)

Page : 39 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E
Client sampling date / time					09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-018	ES1924021-020	ES1924021-021	ES1924021-022	ES1924021-024
					Result	Result	Result	Result	Result
EP075G: Chlorinated Hydrocarbons - Continued									
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg		----	<0.5	----	----	<0.5
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg		----	<0.5	----	----	<0.5
Hexachloroethane	67-72-1	0.5	mg/kg		----	<0.5	----	----	<0.5
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg		----	<0.5	----	----	<0.5
Hexachloropropylene	1888-71-7	0.5	mg/kg		----	<0.5	----	----	<0.5
Hexachlorobutadiene	87-68-3	0.5	mg/kg		----	<0.5	----	----	<0.5
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg		----	<2.5	----	----	<2.5
Pentachlorobenzene	608-93-5	0.5	mg/kg		----	<0.5	----	----	<0.5
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg		----	<1.0	----	----	<1.0
EP075H: Anilines and Benzidines									
Aniline	62-53-3	0.5	mg/kg		----	<0.5	----	----	<0.5
4-Chloroaniline	106-47-8	0.5	mg/kg		----	<0.5	----	----	<0.5
2-Nitroaniline	88-74-4	1.0	mg/kg		----	<1.0	----	----	<1.0
3-Nitroaniline	99-09-2	1.0	mg/kg		----	<1.0	----	----	<1.0
Dibenzofuran	132-64-9	0.5	mg/kg		----	<0.5	----	----	<0.5
4-Nitroaniline	100-01-6	0.5	mg/kg		----	<0.5	----	----	<0.5
Carbazole	86-74-8	0.5	mg/kg		----	<0.5	----	----	<0.5
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg		----	<0.5	----	----	<0.5
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	mg/kg		----	<0.5	----	----	<0.5
beta-BHC	319-85-7	0.5	mg/kg		----	<0.5	----	----	<0.5
gamma-BHC	58-89-9	0.5	mg/kg		----	<0.5	----	----	<0.5
delta-BHC	319-86-8	0.5	mg/kg		----	<0.5	----	----	<0.5
Heptachlor	76-44-8	0.5	mg/kg		----	<0.5	----	----	<0.5
Aldrin	309-00-2	0.5	mg/kg		----	<0.5	----	----	<0.5
Heptachlor epoxide	1024-57-3	0.5	mg/kg		----	<0.5	----	----	<0.5
alpha-Endosulfan	959-98-8	0.5	mg/kg		----	<0.5	----	----	<0.5
4,4'-DDE	72-55-9	0.5	mg/kg		----	<0.5	----	----	<0.5
Dieldrin	60-57-1	0.5	mg/kg		----	<0.5	----	----	<0.5
Endrin	72-20-8	0.5	mg/kg		----	<0.5	----	----	<0.5
beta-Endosulfan	33213-65-9	0.5	mg/kg		----	<0.5	----	----	<0.5
4,4'-DDD	72-54-8	0.5	mg/kg		----	<0.5	----	----	<0.5
Endosulfan sulfate	1031-07-8	0.5	mg/kg		----	<0.5	----	----	<0.5

(Preliminary Report)

Page : 40 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E
Client sampling date / time					09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-018	ES1924021-020	ES1924021-021	ES1924021-022	ES1924021-024
					Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued									
4,4'-DDT	50-29-3	1.0	mg/kg		----	<1.0	----	----	<1.0
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	0.5	mg/kg		----	<0.5	----	----	<0.5
Dimethoate	60-51-5	0.5	mg/kg		----	<0.5	----	----	<0.5
Diazinon	333-41-5	0.5	mg/kg		----	<0.5	----	----	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg		----	<0.5	----	----	<0.5
Malathion	121-75-5	0.5	mg/kg		----	<0.5	----	----	<0.5
Fenthion	55-38-9	0.5	mg/kg		----	<0.5	----	----	<0.5
Chlorpyrifos	2921-88-2	0.5	mg/kg		----	<0.5	----	----	<0.5
Pirimphos-ethyl	23505-41-1	0.5	mg/kg		----	<0.5	----	----	<0.5
Chlorfenvinphos	470-90-6	0.5	mg/kg		----	<0.5	----	----	<0.5
Prothiofos	34643-46-4	0.5	mg/kg		----	<0.5	----	----	<0.5
Ethion	563-12-2	0.5	mg/kg		----	<0.5	----	----	<0.5
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
^ 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



Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E
Client sampling date / time				09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-018	ES1924021-020	ES1924021-021	ES1924021-022	ES1924021-024	
				Result	Result	Result	Result	Result	
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	<0.2	
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	----	----	<0.5	
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	<0.0002	----	<0.0002	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	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 (PFTTrDA)	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									

(Preliminary Report)

Page : 42 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E
Client sampling date / time					09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-018	ES1924021-020	ES1924021-021	ES1924021-022	ES1924021-024
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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)	24448-09-7	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	----	----
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	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	----	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	----	<0.0002	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	100	----	----	96.4
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		----	97.7	----	----	95.7
Toluene-D8	2037-26-5	0.5	%		----	104	----	----	106

(Preliminary Report)

Page : 43 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E
Client sampling date / time					09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-018	ES1924021-020	ES1924021-021	ES1924021-022	ES1924021-024
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.5	%		----	86.9	----	----	90.7
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	81.2	----	----	84.1
2-Chlorophenol-D4	93951-73-6	0.5	%		----	88.9	----	----	90.9
2,4,6-Tribromophenol	118-79-6	0.5	%		----	67.8	----	----	66.9
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	94.6	----	----	95.8
Anthracene-d10	1719-06-8	0.5	%		----	99.0	----	----	99.9
4-Terphenyl-d14	1718-51-0	0.5	%		----	99.7	----	----	102
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		----	104	----	----	104
Phenol-d6	13127-88-3	0.5	%		----	102	----	----	101
2-Chlorophenol-D4	93951-73-6	0.5	%		----	109	----	----	110
2,4,6-Tribromophenol	118-79-6	0.5	%		----	67.2	----	----	66.1
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		----	84.2	----	----	90.6
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		----	108	----	----	105
2-Fluorobiphenyl	321-60-8	0.5	%		----	125	----	----	122
Anthracene-d10	1719-06-8	0.5	%		----	96.7	----	----	94.3
4-Terphenyl-d14	1718-51-0	0.5	%		----	121	----	----	120
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	96.2	----	----	95.5
Toluene-D8	2037-26-5	0.2	%		----	82.5	----	----	83.8
4-Bromofluorobenzene	460-00-4	0.2	%		----	83.9	----	----	87.2
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		76.5	----	84.0	----	----
13C8-PFOA	----	0.0002	%		80.0	----	78.0	----	----

(Preliminary Report)

Page : 44 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-026	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	----	8.2	----	----	----	6.6
Moisture Content	----	1.0	%	14.1	----	----	9.4	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	----	----	----
Asbestos Type	1332-21-4	-	--	----	----	-	----	----	----
Sample weight (dry)	----	0.01	g	----	----	48.1	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	A. SMYLIE	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	No	----	----	----
Organic Fibre	----	0.1	g/kg	----	----	No	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	8	----	----	6	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	5	----	----	13	----	----
Copper	7440-50-8	5	mg/kg	29	----	----	75	----	----
Lead	7439-92-1	5	mg/kg	23	----	----	49	----	----
Nickel	7440-02-0	2	mg/kg	10	----	----	44	----	----
Zinc	7440-66-6	5	mg/kg	47	----	----	107	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	<0.5	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	----	----	<0.5	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	----	----	<0.5	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	----	----	<0.5	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	----	----	<0.5	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	<5	----	----	<5	----	----

(Preliminary Report)

Page : 45 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-026	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030
					Result	Result	Result	Result	Result
EP074B: Oxygenated Compounds - Continued									
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	----	----	<5	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		<5	----	----	<5	----
2-Hexanone (MBK)	591-78-6	5	mg/kg		<5	----	----	<5	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		<5	----	----	<5	----
Chloromethane	74-87-3	5	mg/kg		<5	----	----	<5	----
Vinyl chloride	75-01-4	5	mg/kg		<5	----	----	<5	----
Bromomethane	74-83-9	5	mg/kg		<5	----	----	<5	----
Chloroethane	75-00-3	5	mg/kg		<5	----	----	<5	----
Trichlorofluoromethane	75-69-4	5	mg/kg		<5	----	----	<5	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Iodomethane	74-88-4	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Trichloroethene	79-01-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Dibromomethane	74-95-3	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,3-Dichloropropane	142-28-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Tetrachloroethene	127-18-4	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg		<0.5	----	----	<0.5	----

(Preliminary Report)

Page : 46 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-026	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Pentachloroethane	76-01-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Bromobenzene	108-86-1	0.5	mg/kg		<0.5	----	----	<0.5	----
2-Chlorotoluene	95-49-8	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Chlorotoluene	106-43-4	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Bromodichloromethane	75-27-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Dibromochloromethane	124-48-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Bromoform	75-25-2	0.5	mg/kg		<0.5	----	----	<0.5	----
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	----

(Preliminary Report)

Page : 47 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-026	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ 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	----
EP075A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	<0.5	----
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg		<0.5	----	----	<0.5	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Pentachlorophenol	87-86-5	1	mg/kg		<1	----	----	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
2-Methylnaphthalene	91-57-6	0.5	mg/kg		<0.5	----	----	<0.5	----
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg		<0.5	----	----	<0.5	----
7,12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg		<0.5	----	----	<0.5	----
3-Methylcholanthrene	56-49-5	0.5	mg/kg		<0.5	----	----	<0.5	----
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Diethyl phthalate	84-66-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Di-n-butyl phthalate	84-74-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Butyl benzyl phthalate	85-68-7	0.5	mg/kg		<0.5	----	----	<0.5	----
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg		<5.0	----	----	<5.0	----
Di-n-octylphthalate	117-84-0	0.5	mg/kg		<0.5	----	----	<0.5	----
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg		<0.5	----	----	<0.5	----
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg		<0.5	----	----	<0.5	----
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg		<1.0	----	----	<1.0	----
N-Nitrosomorpholine	59-89-2	0.5	mg/kg		<0.5	----	----	<0.5	----
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg		<0.5	----	----	<0.5	----

(Preliminary Report)

Page : 48 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-026	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030
					Result	Result	Result	Result	Result
EP075D: Nitrosamines - Continued									
N-Nitrosopiperidine	100-75-4	0.5	mg/kg		<0.5	----	----	<0.5	----
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg		<0.5	----	----	<0.5	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg		<1.0	----	----	<1.0	----
Methapyrilene	91-80-5	0.5	mg/kg		<0.5	----	----	<0.5	----
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Acetophenone	98-86-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Nitrobenzene	98-95-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Isophorone	78-59-1	0.5	mg/kg		<0.5	----	----	<0.5	----
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg		<1.0	----	----	<1.0	----
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg		<1.0	----	----	<1.0	----
1-Naphthylamine	134-32-7	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg		<0.5	----	----	<0.5	----
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Azobenzene	103-33-3	1	mg/kg		<1	----	----	<1	----
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Phenacetin	62-44-2	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Aminobiphenyl	92-67-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Pentachloronitrobenzene	82-68-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Pronamide	23950-58-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorobenzilate	510-15-6	0.5	mg/kg		<0.5	----	----	<0.5	----
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg		<0.5	----	----	<0.5	----
EP075G: Chlorinated Hydrocarbons									
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg		<0.5	----	----	<0.5	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachloroethane	67-72-1	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg		<0.5	----	----	<0.5	----

(Preliminary Report)

Page : 49 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-026	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030
					Result	Result	Result	Result	Result
EP075G: Chlorinated Hydrocarbons - Continued									
Hexachloropropylene	1888-71-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg		<2.5	----	----	<2.5	----
Pentachlorobenzene	608-93-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg		<1.0	----	----	<1.0	----
EP075H: Anilines and Benzidines									
Aniline	62-53-3	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Chloroaniline	106-47-8	0.5	mg/kg		<0.5	----	----	<0.5	----
2-Nitroaniline	88-74-4	1.0	mg/kg		<1.0	----	----	<1.0	----
3-Nitroaniline	99-09-2	1.0	mg/kg		<1.0	----	----	<1.0	----
Dibenzofuran	132-64-9	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Nitroaniline	100-01-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Carbazole	86-74-8	0.5	mg/kg		<0.5	----	----	<0.5	----
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg		<0.5	----	----	<0.5	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	mg/kg		<0.5	----	----	<0.5	----
beta-BHC	319-85-7	0.5	mg/kg		<0.5	----	----	<0.5	----
gamma-BHC	58-89-9	0.5	mg/kg		<0.5	----	----	<0.5	----
delta-BHC	319-86-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Heptachlor	76-44-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Aldrin	309-00-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	mg/kg		<0.5	----	----	<0.5	----
alpha-Endosulfan	959-98-8	0.5	mg/kg		<0.5	----	----	<0.5	----
4,4'-DDE	72-55-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Dieldrin	60-57-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Endrin	72-20-8	0.5	mg/kg		<0.5	----	----	<0.5	----
beta-Endosulfan	33213-65-9	0.5	mg/kg		<0.5	----	----	<0.5	----
4,4'-DDD	72-54-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	mg/kg		<0.5	----	----	<0.5	----
4,4'-DDT	50-29-3	1.0	mg/kg		<1.0	----	----	<1.0	----
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Dimethoate	60-51-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Diazinon	333-41-5	0.5	mg/kg		<0.5	----	----	<0.5	----



Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time				10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-026	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	
				Result	Result	Result	Result	Result	
EP075J: Organophosphorus Pesticides - Continued									
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	<0.5	----	----	<0.5	----	
Malathion	121-75-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
Fenthion	55-38-9	0.5	mg/kg	<0.5	----	----	<0.5	----	
Chlorpyrifos	2921-88-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
Pirimphos-ethyl	23505-41-1	0.5	mg/kg	<0.5	----	----	<0.5	----	
Chlorfenvinphos	470-90-6	0.5	mg/kg	<0.5	----	----	<0.5	----	
Prothiofos	34643-46-4	0.5	mg/kg	<0.5	----	----	<0.5	----	
Ethion	563-12-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
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	----	
^ 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	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	<0.2	----	
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	<0.5	----	
Naphthalene	91-20-3	1	mg/kg	<1	----	----	<1	----	
EP231A: Perfluoroalkyl Sulfonic Acids									

(Preliminary Report)

Page : 51 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-026	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
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)	335-77-3	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



Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time				10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-026	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	
				Result	Result	Result	Result	Result	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	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	
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	355-46-4/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	<0.0002	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	<0.0002	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	103	----	----	104	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	92.3	----	----	98.7	----	
Toluene-D8	2037-26-5	0.5	%	92.0	----	----	99.4	----	
4-Bromofluorobenzene	460-00-4	0.5	%	82.6	----	----	87.8	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	83.5	----	----	81.6	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	91.0	----	----	88.4	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	64.7	----	----	63.9	----	
EP075(SIM)T: PAH Surrogates									

(Preliminary Report)

Page : 53 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-026	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.5	%		96.9	----	----	94.3	----
Anthracene-d10	1719-06-8	0.5	%		100	----	----	96.0	----
4-Terphenyl-d14	1718-51-0	0.5	%		101	----	----	97.7	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		92.3	----	----	96.1	----
Phenol-d6	13127-88-3	0.5	%		95.3	----	----	89.2	----
2-Chlorophenol-D4	93951-73-6	0.5	%		99.1	----	----	95.7	----
2,4,6-Tribromophenol	118-79-6	0.5	%		69.1	----	----	63.8	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		86.4	----	----	82.5	----
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		101	----	----	93.4	----
2-Fluorobiphenyl	321-60-8	0.5	%		120	----	----	117	----
Anthracene-d10	1719-06-8	0.5	%		92.2	----	----	89.9	----
4-Terphenyl-d14	1718-51-0	0.5	%		116	----	----	112	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		92.0	----	----	98.4	----
Toluene-D8	2037-26-5	0.2	%		75.3	----	----	78.7	----
4-Bromofluorobenzene	460-00-4	0.2	%		80.2	----	----	84.8	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	76.5	----	----	88.5
13C8-PFOA	----	0.0002	%		----	70.0	----	----	97.0

(Preliminary Report)

Page : 54 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.1E	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1924021-031	ES1924021-032	ES1924021-033	ES1924021-034	-----
					Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		----	----	12.0	----	----
Moisture Content	----	1.0	%		----	12.8	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	----	No	----
Asbestos (Trace)	1332-21-4	5	Fibres		No	----	----	No	----
Asbestos Type	1332-21-4	-	--		-	----	----	-	----
Sample weight (dry)	----	0.01	g		51.8	----	----	28.1	----
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	----	----	A. SMYLIE	----
Synthetic Mineral Fibre	----	0.1	g/kg		No	----	----	No	----
Organic Fibre	----	0.1	g/kg		No	----	----	No	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	11	----	----	----
Cadmium	7440-43-9	1	mg/kg		----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg		----	26	----	----	----
Copper	7440-50-8	5	mg/kg		----	52	----	----	----
Lead	7439-92-1	5	mg/kg		----	217	----	----	----
Nickel	7440-02-0	2	mg/kg		----	30	----	----	----
Zinc	7440-66-6	5	mg/kg		----	230	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	0.3	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg		----	<0.5	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg		----	<0.5	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg		----	<0.5	----	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg		----	<0.5	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg		----	<0.5	----	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg		----	<0.5	----	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg		----	<0.5	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg		----	<0.5	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg		----	<0.5	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg		----	<5	----	----	----

(Preliminary Report)

Page : 55 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.1E	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1924021-031	ES1924021-032	ES1924021-033	ES1924021-034	-----
					Result	Result	Result	Result	----
EP074B: Oxygenated Compounds - Continued									
2-Butanone (MEK)	78-93-3	5	mg/kg		----	<5	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		----	<5	----	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg		----	<5	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		----	<0.5	----	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		----	<0.5	----	----	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg		----	<0.5	----	----	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		----	<0.5	----	----	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		----	<0.5	----	----	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		----	<0.5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		----	<5	----	----	----
Chloromethane	74-87-3	5	mg/kg		----	<5	----	----	----
Vinyl chloride	75-01-4	5	mg/kg		----	<5	----	----	----
Bromomethane	74-83-9	5	mg/kg		----	<5	----	----	----
Chloroethane	75-00-3	5	mg/kg		----	<5	----	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg		----	<5	----	----	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		----	<0.5	----	----	----
Iodomethane	74-88-4	0.5	mg/kg		----	<0.5	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		----	<0.5	----	----	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg		----	<0.5	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		----	<0.5	----	----	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		----	<0.5	----	----	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		----	<0.5	----	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		----	<0.5	----	----	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg		----	<0.5	----	----	----
Trichloroethene	79-01-6	0.5	mg/kg		----	<0.5	----	----	----
Dibromomethane	74-95-3	0.5	mg/kg		----	<0.5	----	----	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		----	<0.5	----	----	----
1,3-Dichloropropane	142-28-9	0.5	mg/kg		----	<0.5	----	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg		----	<0.5	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	<0.5	----	----	----
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg		----	<0.5	----	----	----

(Preliminary Report)

Page : 56 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.1E	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1924021-031	ES1924021-032	ES1924021-033	ES1924021-034	-----
					Result	Result	Result	Result	----
EP074E: Halogenated Aliphatic Compounds - Continued									
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		----	<0.5	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg		----	<0.5	----	----	----
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg		----	<0.5	----	----	----
Pentachloroethane	76-01-7	0.5	mg/kg		----	<0.5	----	----	----
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg		----	<0.5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		----	<0.5	----	----	----
Bromobenzene	108-86-1	0.5	mg/kg		----	<0.5	----	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg		----	<0.5	----	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg		----	<0.5	----	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg		----	<0.5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		----	<0.5	----	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg		----	<0.5	----	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg		----	<0.5	----	----	----
Bromoform	75-25-2	0.5	mg/kg		----	<0.5	----	----	----
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	----	----	----

(Preliminary Report)

Page : 57 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.1E	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1924021-031	ES1924021-032	ES1924021-033	ES1924021-034	-----
					Result	Result	Result	Result	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ 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	----	----	----
EP075A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg		----	<0.5	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	<0.5	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg		----	<0.5	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg		----	<0.5	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg		----	<0.5	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	<0.5	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		----	<0.5	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		----	<0.5	----	----	----
Pentachlorophenol	87-86-5	1	mg/kg		----	<1	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
2-Methylnaphthalene	91-57-6	0.5	mg/kg		----	<0.5	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg		----	<0.5	----	----	----
7,12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg		----	<0.5	----	----	----
3-Methylcholanthrene	56-49-5	0.5	mg/kg		----	<0.5	----	----	----
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	0.5	mg/kg		----	<0.5	----	----	----
Diethyl phthalate	84-66-2	0.5	mg/kg		----	<0.5	----	----	----
Di-n-butyl phthalate	84-74-2	0.5	mg/kg		----	<0.5	----	----	----
Butyl benzyl phthalate	85-68-7	0.5	mg/kg		----	<0.5	----	----	----
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg		----	<5.0	----	----	----
Di-n-octylphthalate	117-84-0	0.5	mg/kg		----	<0.5	----	----	----
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg		----	<0.5	----	----	----
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg		----	<0.5	----	----	----
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg		----	<1.0	----	----	----
N-Nitrosomorpholine	59-89-2	0.5	mg/kg		----	<0.5	----	----	----
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg		----	<0.5	----	----	----

(Preliminary Report)

Page : 58 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.1E	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1924021-031	ES1924021-032	ES1924021-033	ES1924021-034	-----
					Result	Result	Result	Result	----
EP075D: Nitrosamines - Continued									
N-Nitrosopiperidine	100-75-4	0.5	mg/kg		----	<0.5	----	----	----
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg		----	<0.5	----	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg		----	<1.0	----	----	----
Methapyrilene	91-80-5	0.5	mg/kg		----	<0.5	----	----	----
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	0.5	mg/kg		----	<0.5	----	----	----
Acetophenone	98-86-2	0.5	mg/kg		----	<0.5	----	----	----
Nitrobenzene	98-95-3	0.5	mg/kg		----	<0.5	----	----	----
Isophorone	78-59-1	0.5	mg/kg		----	<0.5	----	----	----
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg		----	<1.0	----	----	----
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg		----	<1.0	----	----	----
1-Naphthylamine	134-32-7	0.5	mg/kg		----	<0.5	----	----	----
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg		----	<0.5	----	----	----
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg		----	<0.5	----	----	----
Azobenzene	103-33-3	1	mg/kg		----	<1	----	----	----
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg		----	<0.5	----	----	----
Phenacetin	62-44-2	0.5	mg/kg		----	<0.5	----	----	----
4-Aminobiphenyl	92-67-1	0.5	mg/kg		----	<0.5	----	----	----
Pentachloronitrobenzene	82-68-8	0.5	mg/kg		----	<0.5	----	----	----
Pronamide	23950-58-5	0.5	mg/kg		----	<0.5	----	----	----
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg		----	<0.5	----	----	----
Chlorobenzilate	510-15-6	0.5	mg/kg		----	<0.5	----	----	----
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg		----	<0.5	----	----	----
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg		----	<0.5	----	----	----
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg		----	<0.5	----	----	----
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg		----	<0.5	----	----	----
EP075G: Chlorinated Hydrocarbons									
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg		----	<0.5	----	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg		----	<0.5	----	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg		----	<0.5	----	----	----
Hexachloroethane	67-72-1	0.5	mg/kg		----	<0.5	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg		----	<0.5	----	----	----

(Preliminary Report)

Page : 59 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.1E	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1924021-031	ES1924021-032	ES1924021-033	ES1924021-034	-----
					Result	Result	Result	Result	----
EP075G: Chlorinated Hydrocarbons - Continued									
Hexachloropropylene	1888-71-7	0.5	mg/kg		----	<0.5	----	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg		----	<0.5	----	----	----
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg		----	<2.5	----	----	----
Pentachlorobenzene	608-93-5	0.5	mg/kg		----	<0.5	----	----	----
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg		----	<1.0	----	----	----
EP075H: Anilines and Benzidines									
Aniline	62-53-3	0.5	mg/kg		----	<0.5	----	----	----
4-Chloroaniline	106-47-8	0.5	mg/kg		----	<0.5	----	----	----
2-Nitroaniline	88-74-4	1.0	mg/kg		----	<1.0	----	----	----
3-Nitroaniline	99-09-2	1.0	mg/kg		----	<1.0	----	----	----
Dibenzofuran	132-64-9	0.5	mg/kg		----	<0.5	----	----	----
4-Nitroaniline	100-01-6	0.5	mg/kg		----	<0.5	----	----	----
Carbazole	86-74-8	0.5	mg/kg		----	<0.5	----	----	----
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg		----	<0.5	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	mg/kg		----	<0.5	----	----	----
beta-BHC	319-85-7	0.5	mg/kg		----	<0.5	----	----	----
gamma-BHC	58-89-9	0.5	mg/kg		----	<0.5	----	----	----
delta-BHC	319-86-8	0.5	mg/kg		----	<0.5	----	----	----
Heptachlor	76-44-8	0.5	mg/kg		----	<0.5	----	----	----
Aldrin	309-00-2	0.5	mg/kg		----	<0.5	----	----	----
Heptachlor epoxide	1024-57-3	0.5	mg/kg		----	<0.5	----	----	----
alpha-Endosulfan	959-98-8	0.5	mg/kg		----	<0.5	----	----	----
4,4'-DDE	72-55-9	0.5	mg/kg		----	<0.5	----	----	----
Dieldrin	60-57-1	0.5	mg/kg		----	<0.5	----	----	----
Endrin	72-20-8	0.5	mg/kg		----	<0.5	----	----	----
beta-Endosulfan	33213-65-9	0.5	mg/kg		----	<0.5	----	----	----
4,4'-DDD	72-54-8	0.5	mg/kg		----	<0.5	----	----	----
Endosulfan sulfate	1031-07-8	0.5	mg/kg		----	<0.5	----	----	----
4,4'-DDT	50-29-3	1.0	mg/kg		----	<1.0	----	----	----
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	0.5	mg/kg		----	<0.5	----	----	----
Dimethoate	60-51-5	0.5	mg/kg		----	<0.5	----	----	----
Diazinon	333-41-5	0.5	mg/kg		----	<0.5	----	----	----

Analytical Results

EP231A: Perfluoroalkyl Sulfonic Acids

(Preliminary Report)

Page : 61 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.1E	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1924021-031	ES1924021-032	ES1924021-033	ES1924021-034	-----
					Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
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)	335-77-3	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	----	----



Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.1E	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----
Client sampling date / time				10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit	ES1924021-031	ES1924021-032	ES1924021-033	ES1924021-034	-----	
				Result	Result	Result	Result	----	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	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	----	----	
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	355-46-4/1763-23-1	0.0002	mg/kg	----	----	<0.0002	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	----	<0.0002	----	----	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	93.4	----	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	----	89.0	----	----	----	
Toluene-D8	2037-26-5	0.5	%	----	92.0	----	----	----	
4-Bromofluorobenzene	460-00-4	0.5	%	----	80.8	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	----	81.1	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	----	87.5	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	----	63.7	----	----	----	
EP075(SIM)T: PAH Surrogates									

(Preliminary Report)

Page : 63 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.1E	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1924021-031	ES1924021-032	ES1924021-033	ES1924021-034	-----
					Result	Result	Result	Result	----
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.5	%		----	93.5	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	96.3	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	98.7	----	----	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		----	106	----	----	----
Phenol-d6	13127-88-3	0.5	%		----	98.7	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	102	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		----	49.7	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		----	89.5	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		----	99.1	----	----	----
2-Fluorobiphenyl	321-60-8	0.5	%		----	121	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	91.6	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	116	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	88.8	----	----	----
Toluene-D8	2037-26-5	0.2	%		----	80.9	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	77.4	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	----	88.5	----	----
13C8-PFOA	----	0.0002	%		----	----	99.0	----	----

(Preliminary Report)

Page : 64 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: TCLP LEACHATE
(Matrix: WATER)

Client sample ID

				BH301 / 0.15E	BH305 / 0.4E	BH307 / 0.5E	----	----
Client sampling date / time				24-Jul-2019 00:00	20-Jul-2019 00:00	18-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1924021-001	ES1924021-011	ES1924021-020	-----	-----
				Result	Result	Result	----	----
EG005(ED093)C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	<0.1	----	----
Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	<0.05	----	----
Chromium	7440-47-3	0.1	mg/L	<0.1	<0.1	<0.1	----	----
Copper	7440-50-8	0.1	mg/L	0.7	<0.1	<0.1	----	----
Lead	7439-92-1	0.1	mg/L	2.8	<0.1	<0.1	----	----
Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	<0.1	----	----
Zinc	7440-66-6	0.1	mg/L	1.8	0.2	<0.1	----	----
EG035C: Leachable Mercury by FIMS								
Mercury	7439-97-6	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	28.0	27.6	30.2	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	57.2	58.6	69.4	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	74.6	70.7	79.1	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	93.0	89.1	95.8	----	----

(Preliminary Report)

Page : 65 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Results

Sub-Matrix: **TCLP LEACHATE**
(Matrix: **WATER**)

Client sample ID

				BH301 / 0.15E	BH305 / 0.4E	BH307 / 0.5E	----	----
Client sampling date / time				24-Jul-2019 00:00	20-Jul-2019 00:00	18-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1924021-001	ES1924021-011	ES1924021-020	-----	-----
				Result	Result	Result	----	----
EP075(SIM)T: PAH Surrogates - Continued								
Anthracene-d10	1719-06-8	1.0	%	92.7	97.2	89.4	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	92.9	95.6	97.6	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	BH301 / 0.15E - 24-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH303 / 0.2E - 15-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH304 / 0.7E - 11-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH305 / 0.4E - 20-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH306 / 0.5E - 09-Jul-2019 00:00	Mid brown soil containing several fragments of asbestos cement debris approximately 2x2x2mm and several loose asbestos fibre bundles.
EA200: Description	BH307 / 0.5E - 18-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH403 / 0.2E - 10-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH404 / 0.1E - 10-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH404 / 0.5E - 10-Jul-2019 00:00	Mid brown soil.

Page : 66 of 67
 Work Order : ES1924021
 Client : GOLDER ASSOCIATES
 Project : 19125312



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	64	130
Toluene-D8	2037-26-5	66	136
4-Bromofluorobenzene	460-00-4	60	122
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	29	149
Phenol-d6	13127-88-3	32	128
2-Chlorophenol-D4	93951-73-6	32	128
2,4,6-Tribromophenol	118-79-6	13	121
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	33	125
1,2-Dichlorobenzene-D4	2199-69-1	34	108
2-Fluorobiphenyl	321-60-8	35	121
Anthracene-d10	1719-06-8	35	123
4-Terphenyl-d14	1718-51-0	33	125
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: TCLP LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125

(Preliminary Report)

Page : 67 of 67
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Sub-Matrix: TCLP LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112

CERTIFICATE OF ANALYSIS

Work Order : **ES1924021**
Client : **GOLDER ASSOCIATES**
Contact : ERIC WON
Address : LEVEL 1, 124 PACIFIC HIGHWAY
 ST LEONARDS NSW, AUSTRALIA 2065
Telephone : ----
Project : 19125312
Order number : 19125312
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : EN/002/18 National BQ
No. of samples received : 33
No. of samples analysed : 33

Page : 1 of 80
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 31-Jul-2019 11:24
Date Analysis Commenced : 02-Aug-2019
Issue Date : 12-Aug-2019 16:12



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 Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive 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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Evie Sidarta	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	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.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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.
- EP071: Results of sample BH305 / 0.4E have been confirmed by re-extraction and re-analysis.
- 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.
- EP075: 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- ASS: EA029 (SPOCAS): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO₃) 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.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- 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.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.



- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
 - EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.
-



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time					24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	----	25.8	----	----	----	----
Moisture Content	----	1.0	%	25.1	----	----	12.6	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	----	No	No
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	----	No	No
Asbestos Type	1332-21-4	-	--	----	----	-	----	-	-
Sample weight (dry)	----	0.01	g	----	----	14.8	----	38.4	38.4
APPROVED IDENTIFIER:	----	-	--	----	----	A. SMYLIE	----	A. SMYLIE	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	No	----	No	No
Organic Fibre	----	0.1	g/kg	----	----	No	----	No	No
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	12	----	----	8	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	13	----	----	10	----	----
Copper	7440-50-8	5	mg/kg	64	----	----	37	----	----
Lead	7439-92-1	5	mg/kg	285	----	----	66	----	----
Nickel	7440-02-0	2	mg/kg	8	----	----	17	----	----
Zinc	7440-66-6	5	mg/kg	392	----	----	67	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	0.1	----	----	<0.1	----	----
EN33: TCLP Leach									
Initial pH	----	0.1	pH Unit	9.4	----	----	----	----	----
After HCl pH	----	0.1	pH Unit	1.5	----	----	----	----	----
Extraction Fluid Number	----	1	-	1	----	----	----	----	----
Final pH	----	0.1	pH Unit	5.4	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	<0.5	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	----	----	<0.5	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	----	----	<0.5	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	----	----	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time					24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
tert-Butylbenzene	98-06-6	0.5	mg/kg		<0.5	----	----	<0.5	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg		<0.5	----	----	<0.5	----
n-Butylbenzene	104-51-8	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg		<5	----	----	<5	----
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	----	----	<5	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		<5	----	----	<5	----
2-Hexanone (MBK)	591-78-6	5	mg/kg		<5	----	----	<5	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		<5	----	----	<5	----
Chloromethane	74-87-3	5	mg/kg		<5	----	----	<5	----
Vinyl chloride	75-01-4	5	mg/kg		<5	----	----	<5	----
Bromomethane	74-83-9	5	mg/kg		<5	----	----	<5	----
Chloroethane	75-00-3	5	mg/kg		<5	----	----	<5	----
Trichlorofluoromethane	75-69-4	5	mg/kg		<5	----	----	<5	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Iodomethane	74-88-4	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Trichloroethene	79-01-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Dibromomethane	74-95-3	0.5	mg/kg		<0.5	----	----	<0.5	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time				24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	----	----	<0.5	----
1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	----	----	<0.5	----
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	----	----	<0.5	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	----	----	<0.5	----
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	----	----	<0.5	----
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	----	----	<0.5	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	----	----	<0.5	----
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	----	----	<0.5	----
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	----	----	<0.5	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	----	----	<0.5	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	----	----	<0.5	----
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	----	----	<0.5	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	----	----	<0.5	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	----	----	<0.5	----
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	----	----	<0.5	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	<0.5	----	----	<0.5	----
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	----	----	<0.5	----
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	----	----	<0.5	----
Bromoform	75-25-2	0.5	mg/kg	<0.5	----	----	<0.5	----
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	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID		BH301 / 0.15E		BH301 / 0.15E		BH301 / 0.15E		BH303 / 0.2E		BH303 / 0.2E	
Client sampling date / time				24-Jul-2019 00:00		24-Jul-2019 00:00		24-Jul-2019 00:00		15-Jul-2019 00:00		15-Jul-2019 00:00		15-Jul-2019 00:00	
Compound		CAS Number	LOR	Unit	ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006						
					Result	Result	Result	Result	Result						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued															
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	----						
EP075A: Phenolic Compounds															
Phenol		108-95-2	0.5	mg/kg	<0.5	----	----	<0.5	----						
2-Chlorophenol		95-57-8	0.5	mg/kg	<0.5	----	----	<0.5	----						
2-Methylphenol		95-48-7	0.5	mg/kg	<0.5	----	----	<0.5	----						
3- & 4-Methylphenol		1319-77-3	0.5	mg/kg	<0.5	----	----	<0.5	----						
2-Nitrophenol		88-75-5	0.5	mg/kg	<0.5	----	----	<0.5	----						
2.4-Dimethylphenol		105-67-9	0.5	mg/kg	<0.5	----	----	<0.5	----						
2.4-Dichlorophenol		120-83-2	0.5	mg/kg	<0.5	----	----	<0.5	----						
2.6-Dichlorophenol		87-65-0	0.5	mg/kg	<0.5	----	----	<0.5	----						
4-Chloro-3-methylphenol		59-50-7	0.5	mg/kg	<0.5	----	----	<0.5	----						
2.4.6-Trichlorophenol		88-06-2	0.5	mg/kg	<0.5	----	----	<0.5	----						
2.4.5-Trichlorophenol		95-95-4	0.5	mg/kg	<0.5	----	----	<0.5	----						
Pentachlorophenol		87-86-5	1	mg/kg	<1	----	----	<1	----						
EP075B: Polynuclear Aromatic Hydrocarbons															
2-Methylnaphthalene		91-57-6	0.5	mg/kg	<0.5	----	----	<0.5	----						
N-2-Fluorenyl Acetamide		53-96-3	0.5	mg/kg	<0.5	----	----	<0.5	----						
7.12-Dimethylbenz(a)anthracene		57-97-6	0.5	mg/kg	<0.5	----	----	<0.5	----						
3-Methylcholanthrene		56-49-5	0.5	mg/kg	<0.5	----	----	<0.5	----						
EP075C: Phthalate Esters															
Dimethyl phthalate		131-11-3	0.5	mg/kg	<0.5	----	----	<0.5	----						
Diethyl phthalate		84-66-2	0.5	mg/kg	<0.5	----	----	<0.5	----						
Di-n-butyl phthalate		84-74-2	0.5	mg/kg	<0.5	----	----	<0.5	----						
Butyl benzyl phthalate		85-68-7	0.5	mg/kg	<0.5	----	----	<0.5	----						
bis(2-ethylhexyl) phthalate		117-81-7	5.0	mg/kg	<5.0	----	----	<5.0	----						
Di-n-octylphthalate		117-84-0	0.5	mg/kg	<0.5	----	----	<0.5	----						
EP075D: Nitrosamines															

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time				24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006	
				Result	Result	Result	Result	Result	
EP075D: Nitrosamines - Continued									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg	<1.0	----	----	<1.0	----	
N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg	<1.0	----	----	<1.0	----	
Methapyrilene	91-80-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	0.5	mg/kg	<0.5	----	----	<0.5	----	
Acetophenone	98-86-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
Nitrobenzene	98-95-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
Isophorone	78-59-1	0.5	mg/kg	<0.5	----	----	<0.5	----	
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg	<1.0	----	----	<1.0	----	
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg	<1.0	----	----	<1.0	----	
1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5	----	----	<0.5	----	
Azobenzene	103-33-3	1	mg/kg	<1	----	----	<1	----	
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5	----	----	<0.5	----	
Phenacetin	62-44-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5	----	----	<0.5	----	
Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5	----	----	<0.5	----	
Pronamide	23950-58-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5	----	----	<0.5	----	
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	<0.5	----	----	<0.5	----	
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	<0.5	----	----	<0.5	----	
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
EP075G: Chlorinated Hydrocarbons									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time				24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
				Result	Result	Result	Result	Result
EP075G: Chlorinated Hydrocarbons - Continued								
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	----	----	<0.5	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	----	----	<0.5	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	----	----	<0.5	----
Hexachloroethane	67-72-1	0.5	mg/kg	<0.5	----	----	<0.5	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	----	----	<0.5	----
Hexachloropropylene	1888-71-7	0.5	mg/kg	<0.5	----	----	<0.5	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	----	----	<0.5	----
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	<2.5	----	----	<2.5	----
Pentachlorobenzene	608-93-5	0.5	mg/kg	<0.5	----	----	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg	<1.0	----	----	<1.0	----
EP075H: Anilines and Benzidines								
Aniline	62-53-3	0.5	mg/kg	<0.5	----	----	<0.5	----
4-Chloroaniline	106-47-8	0.5	mg/kg	<0.5	----	----	<0.5	----
2-Nitroaniline	88-74-4	1.0	mg/kg	<1.0	----	----	<1.0	----
3-Nitroaniline	99-09-2	1.0	mg/kg	<1.0	----	----	<1.0	----
Dibenzofuran	132-64-9	0.5	mg/kg	<0.5	----	----	<0.5	----
4-Nitroaniline	100-01-6	0.5	mg/kg	<0.5	----	----	<0.5	----
Carbazole	86-74-8	0.5	mg/kg	<0.5	----	----	<0.5	----
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg	<0.5	----	----	<0.5	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	mg/kg	<0.5	----	----	<0.5	----
beta-BHC	319-85-7	0.5	mg/kg	<0.5	----	----	<0.5	----
gamma-BHC	58-89-9	0.5	mg/kg	<0.5	----	----	<0.5	----
delta-BHC	319-86-8	0.5	mg/kg	<0.5	----	----	<0.5	----
Heptachlor	76-44-8	0.5	mg/kg	<0.5	----	----	<0.5	----
Aldrin	309-00-2	0.5	mg/kg	<0.5	----	----	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	mg/kg	<0.5	----	----	<0.5	----
alpha-Endosulfan	959-98-8	0.5	mg/kg	<0.5	----	----	<0.5	----
4,4'-DDE	72-55-9	0.5	mg/kg	<0.5	----	----	<0.5	----
Dieldrin	60-57-1	0.5	mg/kg	<0.5	----	----	<0.5	----
Endrin	72-20-8	0.5	mg/kg	<0.5	----	----	<0.5	----
beta-Endosulfan	33213-65-9	0.5	mg/kg	<0.5	----	----	<0.5	----
4,4'-DDD	72-54-8	0.5	mg/kg	<0.5	----	----	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	mg/kg	<0.5	----	----	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time					24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
					Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued									
4,4'-DDT	50-29-3	1.0	mg/kg		<1.0	----	----	<1.0	----
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Dimethoate	60-51-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Diazinon	333-41-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg		<0.5	----	----	<0.5	----
Malathion	121-75-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Fenthion	55-38-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorpyrifos	2921-88-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Pirimphos-ethyl	23505-41-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorfenvinphos	470-90-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Prothiofos	34643-46-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Ethion	563-12-2	0.5	mg/kg		<0.5	----	----	<0.5	----
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	----
^ 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	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time				24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006	
				Result	Result	Result	Result	Result	
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	<0.5	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	<0.2	----	
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	<0.5	----	
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	----	----	----	
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)	335-77-3	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									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time					24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
					Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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)	24448-09-7	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	----	----	----
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	355-46-4/1763-23-1	0.0002	mg/kg		----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		----	<0.0002	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		94.6	----	----	90.5	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		95.2	----	----	102	----
Toluene-D8	2037-26-5	0.5	%		102	----	----	109	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH301 / 0.15E	BH301 / 0.15E	BH301 / 0.15E	BH303 / 0.2E	BH303 / 0.2E
Client sampling date / time					24-Jul-2019 00:00	24-Jul-2019 00:00	24-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-001	ES1924021-002	ES1924021-003	ES1924021-004	ES1924021-006
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.5	%		88.7	----	----	90.9	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		81.9	----	----	79.9	----
2-Chlorophenol-D4	93951-73-6	0.5	%		86.6	----	----	86.3	----
2,4,6-Tribromophenol	118-79-6	0.5	%		65.0	----	----	66.7	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		93.4	----	----	91.6	----
Anthracene-d10	1719-06-8	0.5	%		93.9	----	----	91.5	----
4-Terphenyl-d14	1718-51-0	0.5	%		95.7	----	----	95.0	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		95.6	----	----	96.2	----
Phenol-d6	13127-88-3	0.5	%		90.7	----	----	98.2	----
2-Chlorophenol-D4	93951-73-6	0.5	%		95.0	----	----	106	----
2,4,6-Tribromophenol	118-79-6	0.5	%		73.3	----	----	81.8	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		82.9	----	----	90.8	----
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		95.6	----	----	99.7	----
2-Fluorobiphenyl	321-60-8	0.5	%		124	----	----	125	----
Anthracene-d10	1719-06-8	0.5	%		96.1	----	----	93.6	----
4-Terphenyl-d14	1718-51-0	0.5	%		122	----	----	120	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		93.7	----	----	100	----
Toluene-D8	2037-26-5	0.2	%		80.9	----	----	86.4	----
4-Bromofluorobenzene	460-00-4	0.2	%		84.3	----	----	87.3	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	77.5	----	----	----
13C8-PFOA	----	0.0002	%		----	78.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID				
Client sampling date / time				BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Compound				11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00
CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011
				Result	Result	Result	Result	Result
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	6.1	----
pH OX (23B)	----	0.1	pH Unit	----	----	----	7.1	----
EA029-B: Acidity Trail								
Titrateable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	2	----
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	----	<2	----
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	----	<2	----
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S	----	----	----	<0.020	----
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S	----	----	----	<0.020	----
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S	----	----	----	<0.020	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.020	% S	----	----	----	0.021	----
Peroxide Sulfur (23De)	----	0.020	% S	----	----	----	0.028	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S	----	----	----	<0.020	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	----	<10	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.020	% Ca	----	----	----	0.200	----
Peroxide Calcium (23Wh)	----	0.020	% Ca	----	----	----	0.224	----
Acid Reacted Calcium (23X)	----	0.020	% Ca	----	----	----	0.024	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	----	12	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S	----	----	----	<0.020	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg	----	----	----	0.188	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg	----	----	----	0.207	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg	----	----	----	<0.020	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	----	16	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S	----	----	----	0.026	----
EA029-F: Excess Acid Neutralising Capacity								
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3	----	----	----	0.354	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	----	71	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S	----	----	----	0.113	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Client sampling date / time				11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011	
				Result	Result	Result	Result	Result	
EA029-F: Excess Acid Neutralising Capacity - Continued									
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-	----	----	----	1.5	----	
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	<0.02	----	
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	<10	----	
Liming Rate	----	1	kg CaCO3/t	----	----	----	<1	----	
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	<0.02	----	
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	<10	----	
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	<1	----	
EA037: Ass Field Screening Analysis									
ø pH (F)	----	0.1	pH Unit	----	----	----	7.5	----	
ø pH (Fox)	----	0.1	pH Unit	----	----	----	5.2	----	
ø Reaction Rate	----	1	-	----	----	----	2	----	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	----	15.1	----	----	----	
Moisture Content	----	1.0	%	16.7	----	----	----	13.5	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	----	----	
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	----	----	
Asbestos Type	1332-21-4	-	--	----	----	-	----	----	
Sample weight (dry)	----	0.01	g	----	----	17.0	----	----	
APPROVED IDENTIFIER:	----	-	--	----	----	A. SMYLIE	----	----	
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	No	----	----	
Organic Fibre	----	0.1	g/kg	----	----	No	----	----	
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	12	----	----	----	6	
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	<1	
Chromium	7440-47-3	2	mg/kg	14	----	----	----	10	
Copper	7440-50-8	5	mg/kg	22	----	----	----	12	
Lead	7439-92-1	5	mg/kg	17	----	----	----	43	
Nickel	7440-02-0	2	mg/kg	10	----	----	----	24	
Zinc	7440-66-6	5	mg/kg	43	----	----	----	49	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	<0.1	
EN33: TCLP Leach									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011
					Result	Result	Result	Result	Result
EN33: TCLP Leach - Continued									
Initial pH	----	0.1	pH Unit		----	----	----	----	8.4
After HCl pH	----	0.1	pH Unit		----	----	----	----	1.3
Extraction Fluid Number	----	1	-		----	----	----	----	1
Final pH	----	0.1	pH Unit		----	----	----	----	5.0
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg		<0.5	----	----	----	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg		<0.5	----	----	----	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg		<0.5	----	----	----	<0.5
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg		<0.5	----	----	----	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg		<0.5	----	----	----	<0.5
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg		<0.5	----	----	----	<0.5
tert-Butylbenzene	98-06-6	0.5	mg/kg		<0.5	----	----	----	<0.5
p-Isopropyltoluene	99-87-6	0.5	mg/kg		<0.5	----	----	----	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg		<0.5	----	----	----	<0.5
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg		<5	----	----	----	<5
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	----	----	----	<5
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		<5	----	----	----	<5
2-Hexanone (MBK)	591-78-6	5	mg/kg		<5	----	----	----	<5
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		<0.5	----	----	----	<0.5
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		<0.5	----	----	----	<0.5
1,2-Dichloropropane	78-87-5	0.5	mg/kg		<0.5	----	----	----	<0.5
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		<0.5	----	----	----	<0.5
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		<0.5	----	----	----	<0.5
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		<0.5	----	----	----	<0.5
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		<5	----	----	----	<5
Chloromethane	74-87-3	5	mg/kg		<5	----	----	----	<5
Vinyl chloride	75-01-4	5	mg/kg		<5	----	----	----	<5
Bromomethane	74-83-9	5	mg/kg		<5	----	----	----	<5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Client sampling date / time				11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Chloroethane	75-00-3	5	mg/kg	<5	----	----	----	<5
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	----	----	----	<5
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	----	----	----	<0.5
Iodomethane	74-88-4	0.5	mg/kg	<0.5	----	----	----	<0.5
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	----	----	----	<0.5
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	----	----	----	<0.5
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	----	----	----	<0.5
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	----	----	----	<0.5
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	----	----	----	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	----	----	----	<0.5
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	----	----	----	<0.5
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	----	----	----	<0.5
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	----	----	----	<0.5
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	----	----	----	<0.5
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	----	----	----	<0.5
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	----	----	----	<0.5
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	----	----	----	<0.5
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	----	----	----	<0.5
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	----	----	----	<0.5
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	----	----	----	<0.5
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	----	----	----	<0.5
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	----	----	----	<0.5
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	----	----	----	<0.5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	----	----	----	<0.5
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	----	----	----	<0.5
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	----	----	----	<0.5
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	----	----	----	<0.5
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	----	----	----	<0.5
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	----	----	----	<0.5
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	----	----	----	<0.5
Bromoform	75-25-2	0.5	mg/kg	<0.5	----	----	----	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

Client sampling date / time				BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Compound				CAS Number	LOR	Unit	Result	Result
				ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011
				Result	Result	Result	Result	Result

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	----	----	----	0.7
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	0.7
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	10.1
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	3.8
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	15.2
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	16.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	14.4
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	13.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	18.3
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	6.7
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	17.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	8.0
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	2.7
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	10.2
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	138
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	25.2
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	25.2
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	25.2

EP075A: Phenolic Compounds

Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	<0.5
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5	----	----	----	<0.5
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	<0.5
Pentachlorophenol	87-86-5	1	mg/kg	<1	----	----	----	<1

EP075B: Polynuclear Aromatic Hydrocarbons



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011
				Result	Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5	----	----	----	----	<0.5
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5	----	----	----	----	<0.5
7,12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5	----	----	----	----	<0.5
3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5	----	----	----	----	<0.5
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5	----	----	----	----	<0.5
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg	<5.0	----	----	----	----	<5.0
Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5	----	----	----	----	<0.5
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5	----	----	----	----	<0.5
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5	----	----	----	----	<0.5
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg	<1.0	----	----	----	----	<1.0
N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5	----	----	----	----	<0.5
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5	----	----	----	----	<0.5
N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5	----	----	----	----	<0.5
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5	----	----	----	----	<0.5
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg	<1.0	----	----	----	----	<1.0
Methapyrilene	91-80-5	0.5	mg/kg	<0.5	----	----	----	----	<0.5
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Acetophenone	98-86-2	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Nitrobenzene	98-95-3	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Isophorone	78-59-1	0.5	mg/kg	<0.5	----	----	----	----	<0.5
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg	<1.0	----	----	----	----	<1.0
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg	<1.0	----	----	----	----	<1.0
1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5	----	----	----	----	<0.5
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5	----	----	----	----	<0.5
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Azobenzene	103-33-3	1	mg/kg	<1	----	----	----	----	<1
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5	----	----	----	----	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011
				Result	Result	Result	Result	Result	Result
EP075E: Nitroaromatics and Ketones - Continued									
Phenacetin	62-44-2	0.5	mg/kg	<0.5	----	----	----	----	<0.5
4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Pronamide	23950-58-5	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5	----	----	----	----	<0.5
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	<0.5	----	----	----	----	<0.5
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	<0.5	----	----	----	----	<0.5
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	<0.5	----	----	----	----	<0.5
EP075G: Chlorinated Hydrocarbons									
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	----	----	----	----	<0.5
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	----	----	----	----	<0.5
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Hexachloroethane	67-72-1	0.5	mg/kg	<0.5	----	----	----	----	<0.5
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Hexachloropropylene	1888-71-7	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	<2.5	----	----	----	----	<2.5
Pentachlorobenzene	608-93-5	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg	<1.0	----	----	----	----	<1.0
EP075H: Anilines and Benzidines									
Aniline	62-53-3	0.5	mg/kg	<0.5	----	----	----	----	<0.5
4-Chloroaniline	106-47-8	0.5	mg/kg	<0.5	----	----	----	----	<0.5
2-Nitroaniline	88-74-4	1.0	mg/kg	<1.0	----	----	----	----	<1.0
3-Nitroaniline	99-09-2	1.0	mg/kg	<1.0	----	----	----	----	<1.0
Dibenzofuran	132-64-9	0.5	mg/kg	<0.5	----	----	----	----	0.6
4-Nitroaniline	100-01-6	0.5	mg/kg	<0.5	----	----	----	----	<0.5
Carbazole	86-74-8	0.5	mg/kg	<0.5	----	----	----	----	1.5
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg	<0.5	----	----	----	----	<0.5
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	mg/kg	<0.5	----	----	----	----	<0.5
beta-BHC	319-85-7	0.5	mg/kg	<0.5	----	----	----	----	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Client sampling date / time				11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
gamma-BHC	58-89-9	0.5	mg/kg	<0.5	----	----	----	<0.5
delta-BHC	319-86-8	0.5	mg/kg	<0.5	----	----	----	<0.5
Heptachlor	76-44-8	0.5	mg/kg	<0.5	----	----	----	<0.5
Aldrin	309-00-2	0.5	mg/kg	<0.5	----	----	----	<0.5
Heptachlor epoxide	1024-57-3	0.5	mg/kg	<0.5	----	----	----	<0.5
alpha-Endosulfan	959-98-8	0.5	mg/kg	<0.5	----	----	----	<0.5
4,4'-DDE	72-55-9	0.5	mg/kg	<0.5	----	----	----	<0.5
Dieldrin	60-57-1	0.5	mg/kg	<0.5	----	----	----	<0.5
Endrin	72-20-8	0.5	mg/kg	<0.5	----	----	----	<0.5
beta-Endosulfan	33213-65-9	0.5	mg/kg	<0.5	----	----	----	<0.5
4,4'-DDD	72-54-8	0.5	mg/kg	<0.5	----	----	----	<0.5
Endosulfan sulfate	1031-07-8	0.5	mg/kg	<0.5	----	----	----	<0.5
4,4'-DDT	50-29-3	1.0	mg/kg	<1.0	----	----	----	<1.0
EP075J: Organophosphorus Pesticides								
Dichlorvos	62-73-7	0.5	mg/kg	<0.5	----	----	----	<0.5
Dimethoate	60-51-5	0.5	mg/kg	<0.5	----	----	----	<0.5
Diazinon	333-41-5	0.5	mg/kg	<0.5	----	----	----	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	<0.5	----	----	----	<0.5
Malathion	121-75-5	0.5	mg/kg	<0.5	----	----	----	<0.5
Fenthion	55-38-9	0.5	mg/kg	<0.5	----	----	----	<0.5
Chlorpyrifos	2921-88-2	0.5	mg/kg	<0.5	----	----	----	<0.5
Pirimphos-ethyl	23505-41-1	0.5	mg/kg	<0.5	----	----	----	<0.5
Chlorfenvinphos	470-90-6	0.5	mg/kg	<0.5	----	----	----	<0.5
Prothiofos	34643-46-4	0.5	mg/kg	<0.5	----	----	----	<0.5
Ethion	563-12-2	0.5	mg/kg	<0.5	----	----	----	<0.5
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	----	----	----	460
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	480
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	940
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011
				Result	Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ 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	----	----	----	----	830
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	240
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	1070
^ >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
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----	<0.5
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	----	----	----	----
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)	335-77-3	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	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Client sampling date / time				11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
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)	24448-09-7	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	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	----	<0.0005	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011
					Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
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	355-46-4/1763-23-1	0.0002	mg/kg		----	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		----	<0.0002	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		94.5	----	----	----	71.5
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		98.6	----	----	----	105
Toluene-D8	2037-26-5	0.5	%		108	----	----	----	89.2
4-Bromofluorobenzene	460-00-4	0.5	%		93.5	----	----	----	89.0
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		81.2	----	----	----	81.0
2-Chlorophenol-D4	93951-73-6	0.5	%		87.8	----	----	----	87.9
2,4,6-Tribromophenol	118-79-6	0.5	%		67.0	----	----	----	76.2
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		94.2	----	----	----	95.6
Anthracene-d10	1719-06-8	0.5	%		94.5	----	----	----	90.4
4-Terphenyl-d14	1718-51-0	0.5	%		96.8	----	----	----	101
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		98.5	----	----	----	102
Phenol-d6	13127-88-3	0.5	%		90.2	----	----	----	95.7
2-Chlorophenol-D4	93951-73-6	0.5	%		101	----	----	----	103
2,4,6-Tribromophenol	118-79-6	0.5	%		53.2	----	----	----	99.1
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		97.2	----	----	----	88.7
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		98.6	----	----	----	102
2-Fluorobiphenyl	321-60-8	0.5	%		120	----	----	----	119
Anthracene-d10	1719-06-8	0.5	%		95.1	----	----	----	87.4
4-Terphenyl-d14	1718-51-0	0.5	%		121	----	----	----	108
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		97.4	----	----	----	106



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH304 / 0.7E	BH305 / 0.4E
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	20-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-007	ES1924021-008	ES1924021-009	ES1924021-010	ES1924021-011
				Result	Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	0.2	%		85.2	----	----	----	94.0
4-Bromofluorobenzene	460-00-4	0.2	%		86.7	----	----	----	96.2
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	86.5	----	----	----
13C8-PFOA	----	0.0002	%		----	72.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E
Client sampling date / time					20-Jul-2019 00:00	20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-012	ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016
				Result	Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	13.1	----	----	----	13.4	----
Moisture Content	----	1.0	%	----	----	8.0	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	----	----	----	Yes
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	----	----	----	No
Asbestos Type	1332-21-4	-	--	----	-	----	----	----	Ch + Am + Cr
Sample weight (dry)	----	0.01	g	----	26.6	----	----	----	52.2
APPROVED IDENTIFIER:	----	-	--	----	A. SMYLLIE	----	----	----	A. SMYLLIE
Synthetic Mineral Fibre	----	0.1	g/kg	----	No	----	----	----	No
Organic Fibre	----	0.1	g/kg	----	No	----	----	----	No
EG005(ED093)T: 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	----	----	75	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	48	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	205	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	76	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	217	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	----	----	0.2	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	----	----	<0.5	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	----	----	<0.5	----	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	----	----	<0.5	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	----	----	<0.5	----	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	----	----	<0.5	----	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	----	----	<0.5	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	----	<0.5	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	----	----	<0.5	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	----	----	<5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E
Client sampling date / time					20-Jul-2019 00:00	20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-012	ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016
					Result	Result	Result	Result	Result
EP074B: Oxygenated Compounds - Continued									
2-Butanone (MEK)	78-93-3	5	mg/kg		----	----	<5	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		----	----	<5	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg		----	----	<5	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		----	----	<0.5	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		----	----	<0.5	----	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg		----	----	<0.5	----	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		----	----	<0.5	----	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		----	----	<0.5	----	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		----	----	<0.5	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		----	----	<5	----	----
Chloromethane	74-87-3	5	mg/kg		----	----	<5	----	----
Vinyl chloride	75-01-4	5	mg/kg		----	----	<5	----	----
Bromomethane	74-83-9	5	mg/kg		----	----	<5	----	----
Chloroethane	75-00-3	5	mg/kg		----	----	<5	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg		----	----	<5	----	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		----	----	<0.5	----	----
Iodomethane	74-88-4	0.5	mg/kg		----	----	<0.5	----	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		----	----	<0.5	----	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg		----	----	<0.5	----	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		----	----	<0.5	----	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		----	----	<0.5	----	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		----	----	<0.5	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		----	----	<0.5	----	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg		----	----	<0.5	----	----
Trichloroethene	79-01-6	0.5	mg/kg		----	----	<0.5	----	----
Dibromomethane	74-95-3	0.5	mg/kg		----	----	<0.5	----	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		----	----	<0.5	----	----
1,3-Dichloropropane	142-28-9	0.5	mg/kg		----	----	<0.5	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg		----	----	<0.5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	----	<0.5	----	----
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg		----	----	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH305 / 0.4E	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E
Client sampling date / time				20-Jul-2019 00:00	20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-012	ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	----	----	<0.5	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	----	----	<0.5	----	----
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	----	----	<0.5	----	----
Pentachloroethane	76-01-7	0.5	mg/kg	----	----	<0.5	----	----
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	----	----	<0.5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	----	----	<0.5	----	----
Bromobenzene	108-86-1	0.5	mg/kg	----	----	<0.5	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	----	----	<0.5	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	----	----	<0.5	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	----	----	<0.5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	----	----	<0.5	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg	----	----	<0.5	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg	----	----	<0.5	----	----
Bromoform	75-25-2	0.5	mg/kg	----	----	<0.5	----	----
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	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E
Client sampling date / time					20-Jul-2019 00:00	20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-012	ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ 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	----	----
EP075A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg		----	----	<0.5	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	----	<0.5	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg		----	----	<0.5	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg		----	----	<0.5	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg		----	----	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	<0.5	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	<0.5	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	<0.5	----	----
Pentachlorophenol	87-86-5	1	mg/kg		----	----	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
2-Methylnaphthalene	91-57-6	0.5	mg/kg		----	----	<0.5	----	----
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg		----	----	<0.5	----	----
7,12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg		----	----	<0.5	----	----
3-Methylcholanthrene	56-49-5	0.5	mg/kg		----	----	<0.5	----	----
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	0.5	mg/kg		----	----	<0.5	----	----
Diethyl phthalate	84-66-2	0.5	mg/kg		----	----	<0.5	----	----
Di-n-butyl phthalate	84-74-2	0.5	mg/kg		----	----	<0.5	----	----
Butyl benzyl phthalate	85-68-7	0.5	mg/kg		----	----	<0.5	----	----
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg		----	----	<5.0	----	----
Di-n-octylphthalate	117-84-0	0.5	mg/kg		----	----	<0.5	----	----
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg		----	----	<0.5	----	----
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg		----	----	<0.5	----	----
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg		----	----	<1.0	----	----
N-Nitrosomorpholine	59-89-2	0.5	mg/kg		----	----	<0.5	----	----
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg		----	----	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH305 / 0.4E	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E
Client sampling date / time				20-Jul-2019 00:00	20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-012	ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016
				Result	Result	Result	Result	Result
EP075D: Nitrosamines - Continued								
N-Nitrosopiperidine	100-75-4	0.5	mg/kg	----	----	<0.5	----	----
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	----	----	<0.5	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg	----	----	<1.0	----	----
Methapyrilene	91-80-5	0.5	mg/kg	----	----	<0.5	----	----
EP075E: Nitroaromatics and Ketones								
2-Picoline	109-06-8	0.5	mg/kg	----	----	<0.5	----	----
Acetophenone	98-86-2	0.5	mg/kg	----	----	<0.5	----	----
Nitrobenzene	98-95-3	0.5	mg/kg	----	----	<0.5	----	----
Isophorone	78-59-1	0.5	mg/kg	----	----	<0.5	----	----
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg	----	----	<1.0	----	----
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg	----	----	<1.0	----	----
1-Naphthylamine	134-32-7	0.5	mg/kg	----	----	<0.5	----	----
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	----	----	<0.5	----	----
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	----	----	<0.5	----	----
Azobenzene	103-33-3	1	mg/kg	----	----	<1	----	----
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	----	----	<0.5	----	----
Phenacetin	62-44-2	0.5	mg/kg	----	----	<0.5	----	----
4-Aminobiphenyl	92-67-1	0.5	mg/kg	----	----	<0.5	----	----
Pentachloronitrobenzene	82-68-8	0.5	mg/kg	----	----	<0.5	----	----
Pronamide	23950-58-5	0.5	mg/kg	----	----	<0.5	----	----
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	----	----	<0.5	----	----
Chlorobenzilate	510-15-6	0.5	mg/kg	----	----	<0.5	----	----
EP075F: Haloethers								
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	----	----	<0.5	----	----
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	----	----	<0.5	----	----
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	----	----	<0.5	----	----
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	----	----	<0.5	----	----
EP075G: Chlorinated Hydrocarbons								
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	----	----	<0.5	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	----	----	<0.5	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	----	----	<0.5	----	----
Hexachloroethane	67-72-1	0.5	mg/kg	----	----	<0.5	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	----	----	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH305 / 0.4E	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E
Client sampling date / time				20-Jul-2019 00:00	20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-012	ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016
				Result	Result	Result	Result	Result
EP075G: Chlorinated Hydrocarbons - Continued								
Hexachloropropylene	1888-71-7	0.5	mg/kg	----	----	<0.5	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	----	----	<0.5	----	----
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	----	----	<2.5	----	----
Pentachlorobenzene	608-93-5	0.5	mg/kg	----	----	<0.5	----	----
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg	----	----	<1.0	----	----
EP075H: Anilines and Benzidines								
Aniline	62-53-3	0.5	mg/kg	----	----	<0.5	----	----
4-Chloroaniline	106-47-8	0.5	mg/kg	----	----	<0.5	----	----
2-Nitroaniline	88-74-4	1.0	mg/kg	----	----	<1.0	----	----
3-Nitroaniline	99-09-2	1.0	mg/kg	----	----	<1.0	----	----
Dibenzofuran	132-64-9	0.5	mg/kg	----	----	<0.5	----	----
4-Nitroaniline	100-01-6	0.5	mg/kg	----	----	<0.5	----	----
Carbazole	86-74-8	0.5	mg/kg	----	----	<0.5	----	----
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg	----	----	<0.5	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	mg/kg	----	----	<0.5	----	----
beta-BHC	319-85-7	0.5	mg/kg	----	----	<0.5	----	----
gamma-BHC	58-89-9	0.5	mg/kg	----	----	<0.5	----	----
delta-BHC	319-86-8	0.5	mg/kg	----	----	<0.5	----	----
Heptachlor	76-44-8	0.5	mg/kg	----	----	<0.5	----	----
Aldrin	309-00-2	0.5	mg/kg	----	----	<0.5	----	----
Heptachlor epoxide	1024-57-3	0.5	mg/kg	----	----	<0.5	----	----
alpha-Endosulfan	959-98-8	0.5	mg/kg	----	----	<0.5	----	----
4,4'-DDE	72-55-9	0.5	mg/kg	----	----	<0.5	----	----
Dieldrin	60-57-1	0.5	mg/kg	----	----	<0.5	----	----
Endrin	72-20-8	0.5	mg/kg	----	----	<0.5	----	----
beta-Endosulfan	33213-65-9	0.5	mg/kg	----	----	<0.5	----	----
4,4'-DDD	72-54-8	0.5	mg/kg	----	----	<0.5	----	----
Endosulfan sulfate	1031-07-8	0.5	mg/kg	----	----	<0.5	----	----
4,4'-DDT	50-29-3	1.0	mg/kg	----	----	<1.0	----	----
EP075J: Organophosphorus Pesticides								
Dichlorvos	62-73-7	0.5	mg/kg	----	----	<0.5	----	----
Dimethoate	60-51-5	0.5	mg/kg	----	----	<0.5	----	----
Diazinon	333-41-5	0.5	mg/kg	----	----	<0.5	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E
Client sampling date / time				20-Jul-2019 00:00	20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-012	ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016	
				Result	Result	Result	Result	Result	
EP075J: Organophosphorus Pesticides - Continued									
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	----	----	<0.5	----	----	
Malathion	121-75-5	0.5	mg/kg	----	----	<0.5	----	----	
Fenthion	55-38-9	0.5	mg/kg	----	----	<0.5	----	----	
Chlorpyrifos	2921-88-2	0.5	mg/kg	----	----	<0.5	----	----	
Pirimphos-ethyl	23505-41-1	0.5	mg/kg	----	----	<0.5	----	----	
Chlorfenvinphos	470-90-6	0.5	mg/kg	----	----	<0.5	----	----	
Prothiofos	34643-46-4	0.5	mg/kg	----	----	<0.5	----	----	
Ethion	563-12-2	0.5	mg/kg	----	----	<0.5	----	----	
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	----	----	
^ 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	----	----	
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	----	
^ Total Xylenes	----	0.5	mg/kg	----	----	<0.5	----	----	
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E
Client sampling date / time					20-Jul-2019 00:00	20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-012	ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016
					Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
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	----	----	0.0006	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	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	----	----	0.0004	----
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	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID		BH305 / 0.4E		BH305 / 0.4E		BH306 / 0.5E		BH306 / 0.5E		BH306 / 0.5E	
Client sampling date / time				20-Jul-2019 00:00		20-Jul-2019 00:00		09-Jul-2019 00:00		09-Jul-2019 00:00		09-Jul-2019 00:00		09-Jul-2019 00:00	
Compound		CAS Number	LOR	Unit	ES1924021-012	ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016						
					Result	Result	Result	Result	Result						
EP231C: Perfluoroalkyl Sulfonamides - Continued															
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)		24448-09-7	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	----						
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	----	----	0.0010	----						
Sum of PFHxS and PFOS		355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	----	----	0.0006	----						
Sum of PFAS (WA DER List)		----	0.0002	mg/kg	<0.0002	----	----	0.0010	----						
EP066S: PCB Surrogate															
Decachlorobiphenyl		2051-24-3	0.1	%	----	----	82.8	----	----						
EP074S: VOC Surrogates															
1,2-Dichloroethane-D4		17060-07-0	0.5	%	----	----	103	----	----						
Toluene-D8		2037-26-5	0.5	%	----	----	113	----	----						
4-Bromofluorobenzene		460-00-4	0.5	%	----	----	98.2	----	----						
EP075(SIM)S: Phenolic Compound Surrogates															
Phenol-d6		13127-88-3	0.5	%	----	----	82.3	----	----						
2-Chlorophenol-D4		93951-73-6	0.5	%	----	----	88.0	----	----						
2,4,6-Tribromophenol		118-79-6	0.5	%	----	----	71.6	----	----						
EP075(SIM)T: PAH Surrogates															



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH305 / 0.4E	BH305 / 0.4E	BH306 / 0.5E	BH306 / 0.5E	BH306 / 0.5E
Client sampling date / time					20-Jul-2019 00:00	20-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-012	ES1924021-013	ES1924021-014	ES1924021-015	ES1924021-016
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	93.7	----	----
Anthracene-d10	1719-06-8	0.5	%		----	----	92.8	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	96.8	----	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		----	----	100	----	----
Phenol-d6	13127-88-3	0.5	%		----	----	97.4	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	102	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		----	----	81.5	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		----	----	90.4	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		----	----	96.9	----	----
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	119	----	----
Anthracene-d10	1719-06-8	0.5	%		----	----	95.1	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	117	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	101	----	----
Toluene-D8	2037-26-5	0.2	%		----	----	89.4	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	94.0	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		98.0	----	----	93.5	----
13C8-PFOA	----	0.0002	%		106	----	----	88.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID				
Client sampling date / time				BH306 / 1.5E	BH306 / 1.5E	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E
Compound				09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00
CAS Number	LOR	Unit		ES1924021-017	ES1924021-018	ES1924021-019	ES1924021-020	ES1924021-021
				Result	Result	Result	Result	Result
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	----	6.4	----	----
pH OX (23B)	----	0.1	pH Unit	----	----	6.9	----	----
EA029-B: Acidity Trail								
Titrateable Actual Acidity (23F)	----	2	mole H+ / t	----	----	<2	----	----
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t	----	----	<2	----	----
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	----	<2	----	----
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S	----	----	<0.020	----	----
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S	----	----	<0.020	----	----
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S	----	----	<0.020	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.020	% S	----	----	<0.020	----	----
Peroxide Sulfur (23De)	----	0.020	% S	----	----	0.024	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S	----	----	0.024	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	----	15	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.020	% Ca	----	----	0.172	----	----
Peroxide Calcium (23Wh)	----	0.020	% Ca	----	----	0.172	----	----
Acid Reacted Calcium (23X)	----	0.020	% Ca	----	----	<0.020	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	----	<10	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S	----	----	<0.020	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg	----	----	0.117	----	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg	----	----	0.128	----	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg	----	----	<0.020	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	----	<10	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S	----	----	<0.020	----	----
EA029-F: Excess Acid Neutralising Capacity								
Excess Acid Neutralising Capacity (23Q)	----	0.020	% CaCO3	----	----	0.228	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	----	----	46	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.020	% S	----	----	0.073	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID				
Client sampling date / time				BH306 / 1.5E	BH306 / 1.5E	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E
Compound				ES1924021-017	ES1924021-018	ES1924021-019	ES1924021-020	ES1924021-021
CAS Number LOR Unit				Result	Result	Result	Result	Result
EA029-F: Excess Acid Neutralising Capacity - Continued								
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	1.5	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	----	0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	15	----	----
Liming Rate	----	1	kg CaCO3/t	----	----	1	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	0.02	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	15	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	1	----	----
EA037: Ass Field Screening Analysis								
Ø pH (F)	----	0.1	pH Unit	----	----	8.2	----	----
Ø pH (Fox)	----	0.1	pH Unit	----	----	5.3	----	----
Ø Reaction Rate	----	1	-	----	----	2	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	----	15.2	----	----	16.3
Moisture Content	----	1.0	%	14.6	----	----	16.3	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	5	----	----	15	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	5	----	----	14	----
Copper	7440-50-8	5	mg/kg	57	----	----	18	----
Lead	7439-92-1	5	mg/kg	17	----	----	12	----
Nickel	7440-02-0	2	mg/kg	7	----	----	6	----
Zinc	7440-66-6	5	mg/kg	52	----	----	28	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	<0.1	----
EN33: TCLP Leach								
Initial pH	----	0.1	pH Unit	----	----	----	7.1	----
After HCl pH	----	0.1	pH Unit	----	----	----	1.3	----
Extraction Fluid Number	----	1	-	----	----	----	1	----
Final pH	----	0.1	pH Unit	----	----	----	5.0	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH306 / 1.5E	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E
Client sampling date / time					09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-017	ES1924021-018	ES1924021-019	ES1924021-020	ES1924021-021
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Isopropylbenzene	98-82-8	0.5	mg/kg		<0.5	----	----	<0.5	----
n-Propylbenzene	103-65-1	0.5	mg/kg		<0.5	----	----	<0.5	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg		<0.5	----	----	<0.5	----
sec-Butylbenzene	135-98-8	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg		<0.5	----	----	<0.5	----
tert-Butylbenzene	98-06-6	0.5	mg/kg		<0.5	----	----	<0.5	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg		<0.5	----	----	<0.5	----
n-Butylbenzene	104-51-8	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg		<5	----	----	<5	----
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	----	----	<5	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		<5	----	----	<5	----
2-Hexanone (MBK)	591-78-6	5	mg/kg		<5	----	----	<5	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		<5	----	----	<5	----
Chloromethane	74-87-3	5	mg/kg		<5	----	----	<5	----
Vinyl chloride	75-01-4	5	mg/kg		<5	----	----	<5	----
Bromomethane	74-83-9	5	mg/kg		<5	----	----	<5	----
Chloroethane	75-00-3	5	mg/kg		<5	----	----	<5	----
Trichlorofluoromethane	75-69-4	5	mg/kg		<5	----	----	<5	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Iodomethane	74-88-4	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		<0.5	----	----	<0.5	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		<0.5	----	----	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH306 / 1.5E	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E
Client sampling date / time					09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-017	ES1924021-018	ES1924021-019	ES1924021-020	ES1924021-021
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1-Dichloropropylene	563-58-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1.2-Dichloroethane	107-06-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Trichloroethene	79-01-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Dibromomethane	74-95-3	0.5	mg/kg		<0.5	----	----	<0.5	----
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1.3-Dichloropropane	142-28-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Tetrachloroethene	127-18-4	0.5	mg/kg		<0.5	----	----	<0.5	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg		<0.5	----	----	<0.5	----
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg		<0.5	----	----	<0.5	----
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg		<0.5	----	----	<0.5	----
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Pentachloroethane	76-01-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Bromobenzene	108-86-1	0.5	mg/kg		<0.5	----	----	<0.5	----
2-Chlorotoluene	95-49-8	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Chlorotoluene	106-43-4	0.5	mg/kg		<0.5	----	----	<0.5	----
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Bromodichloromethane	75-27-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Dibromochloromethane	124-48-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Bromoform	75-25-2	0.5	mg/kg		<0.5	----	----	<0.5	----
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	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH306 / 1.5E	BH306 / 1.5E	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E
Client sampling date / time				09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-017	ES1924021-018	ES1924021-019	ES1924021-020	ES1924021-021
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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	----
EP075A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	<0.5	----
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5	----	----	<0.5	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	<0.5	----
Pentachlorophenol	87-86-5	1	mg/kg	<1	----	----	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons								
2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5	----	----	<0.5	----
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5	----	----	<0.5	----
7,12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5	----	----	<0.5	----
3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5	----	----	<0.5	----
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5	----	----	<0.5	----
Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5	----	----	<0.5	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH306 / 1.5E	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E
Client sampling date / time				09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-017	ES1924021-018	ES1924021-019	ES1924021-020	ES1924021-021	
				Result	Result	Result	Result	Result	
EP075C: Phthalate Esters - Continued									
Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg	<5.0	----	----	<5.0	----	
Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5	----	----	<0.5	----	
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg	<1.0	----	----	<1.0	----	
N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg	<1.0	----	----	<1.0	----	
Methapyrilene	91-80-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	0.5	mg/kg	<0.5	----	----	<0.5	----	
Acetophenone	98-86-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
Nitrobenzene	98-95-3	0.5	mg/kg	<0.5	----	----	<0.5	----	
Isophorone	78-59-1	0.5	mg/kg	<0.5	----	----	<0.5	----	
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg	<1.0	----	----	<1.0	----	
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg	<1.0	----	----	<1.0	----	
1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5	----	----	<0.5	----	
Azobenzene	103-33-3	1	mg/kg	<1	----	----	<1	----	
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5	----	----	<0.5	----	
Phenacetin	62-44-2	0.5	mg/kg	<0.5	----	----	<0.5	----	
4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5	----	----	<0.5	----	
Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5	----	----	<0.5	----	
Pronamide	23950-58-5	0.5	mg/kg	<0.5	----	----	<0.5	----	
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5	----	----	<0.5	----	
Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5	----	----	<0.5	----	
EP075F: Haloethers									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH306 / 1.5E	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E
Client sampling date / time					09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-017	ES1924021-018	ES1924021-019	ES1924021-020	ES1924021-021
					Result	Result	Result	Result	Result
EP075F: Haloethers - Continued									
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg		<0.5	----	----	<0.5	----
EP075G: Chlorinated Hydrocarbons									
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg		<0.5	----	----	<0.5	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachloroethane	67-72-1	0.5	mg/kg		<0.5	----	----	<0.5	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachloropropylene	1888-71-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg		<2.5	----	----	<2.5	----
Pentachlorobenzene	608-93-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg		<1.0	----	----	<1.0	----
EP075H: Anilines and Benzidines									
Aniline	62-53-3	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Chloroaniline	106-47-8	0.5	mg/kg		<0.5	----	----	<0.5	----
2-Nitroaniline	88-74-4	1.0	mg/kg		<1.0	----	----	<1.0	----
3-Nitroaniline	99-09-2	1.0	mg/kg		<1.0	----	----	<1.0	----
Dibenzofuran	132-64-9	0.5	mg/kg		<0.5	----	----	<0.5	----
4-Nitroaniline	100-01-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Carbazole	86-74-8	0.5	mg/kg		<0.5	----	----	<0.5	----
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg		<0.5	----	----	<0.5	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	mg/kg		<0.5	----	----	<0.5	----
beta-BHC	319-85-7	0.5	mg/kg		<0.5	----	----	<0.5	----
gamma-BHC	58-89-9	0.5	mg/kg		<0.5	----	----	<0.5	----
delta-BHC	319-86-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Heptachlor	76-44-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Aldrin	309-00-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	mg/kg		<0.5	----	----	<0.5	----
alpha-Endosulfan	959-98-8	0.5	mg/kg		<0.5	----	----	<0.5	----
4,4'-DDE	72-55-9	0.5	mg/kg		<0.5	----	----	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH306 / 1.5E	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E
Client sampling date / time					09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-017	ES1924021-018	ES1924021-019	ES1924021-020	ES1924021-021
					Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued									
Dieldrin	60-57-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Endrin	72-20-8	0.5	mg/kg		<0.5	----	----	<0.5	----
beta-Endosulfan	33213-65-9	0.5	mg/kg		<0.5	----	----	<0.5	----
4,4`-DDD	72-54-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Endosulfan sulfate	1031-07-8	0.5	mg/kg		<0.5	----	----	<0.5	----
4,4`-DDT	50-29-3	1.0	mg/kg		<1.0	----	----	<1.0	----
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Dimethoate	60-51-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Diazinon	333-41-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg		<0.5	----	----	<0.5	----
Malathion	121-75-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Fenthion	55-38-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorpyrifos	2921-88-2	0.5	mg/kg		<0.5	----	----	<0.5	----
Pirimphos-ethyl	23505-41-1	0.5	mg/kg		<0.5	----	----	<0.5	----
Chlorfenvinphos	470-90-6	0.5	mg/kg		<0.5	----	----	<0.5	----
Prothiofos	34643-46-4	0.5	mg/kg		<0.5	----	----	<0.5	----
Ethion	563-12-2	0.5	mg/kg		<0.5	----	----	<0.5	----
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	----
^ 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	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH306 / 1.5E	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E
Client sampling date / time					09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-017	ES1924021-018	ES1924021-019	ES1924021-020	ES1924021-021
					Result	Result	Result	Result	Result
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	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	<0.5	----
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		----	<0.0002	----	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	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 (PFTTrDA)	72629-94-8	0.0002	mg/kg		----	<0.0002	----	----	<0.0002



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH306 / 1.5E	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E
Client sampling date / time					09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-017	ES1924021-018	ES1924021-019	ES1924021-020	ES1924021-021
				Result	Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
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)	24448-09-7	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
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	355-46-4/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----	<0.0002
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	84.3	----	----	----	100	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH306 / 1.5E	BH306 / 1.5E	BH306 / 1.5E	BH307 / 0.5E	BH307 / 0.5E
Client sampling date / time					09-Jul-2019 00:00	09-Jul-2019 00:00	09-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-017	ES1924021-018	ES1924021-019	ES1924021-020	ES1924021-021
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		90.6	----	----	97.7	----
Toluene-D8	2037-26-5	0.5	%		95.1	----	----	104	----
4-Bromofluorobenzene	460-00-4	0.5	%		85.5	----	----	86.9	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		85.7	----	----	81.2	----
2-Chlorophenol-D4	93951-73-6	0.5	%		91.8	----	----	88.9	----
2,4,6-Tribromophenol	118-79-6	0.5	%		72.6	----	----	67.8	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		97.9	----	----	94.6	----
Anthracene-d10	1719-06-8	0.5	%		101	----	----	99.0	----
4-Terphenyl-d14	1718-51-0	0.5	%		102	----	----	99.7	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		101	----	----	104	----
Phenol-d6	13127-88-3	0.5	%		89.5	----	----	102	----
2-Chlorophenol-D4	93951-73-6	0.5	%		95.2	----	----	109	----
2,4,6-Tribromophenol	118-79-6	0.5	%		66.1	----	----	67.2	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		84.8	----	----	84.2	----
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		94.6	----	----	108	----
2-Fluorobiphenyl	321-60-8	0.5	%		118	----	----	125	----
Anthracene-d10	1719-06-8	0.5	%		94.2	----	----	96.7	----
4-Terphenyl-d14	1718-51-0	0.5	%		114	----	----	121	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		89.1	----	----	96.2	----
Toluene-D8	2037-26-5	0.2	%		75.0	----	----	82.5	----
4-Bromofluorobenzene	460-00-4	0.2	%		80.4	----	----	83.9	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	76.5	----	----	84.0
13C8-PFOA	----	0.0002	%		----	80.0	----	----	78.0



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E	BH309 / 0.4E	BH403 / 0.2E
Client sampling date / time				18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00	23-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-022	ES1924021-023	ES1924021-024	ES1924021-025	ES1924021-026
				Result	Result	Result	Result	Result
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	----	4.4	----	4.3	----
pH OX (23B)	----	0.1	pH Unit	----	5.0	----	4.9	----
EA029-B: Acidity Trail								
Titrateable Actual Acidity (23F)	----	2	mole H+ / t	----	59	----	68	----
Titrateable Peroxide Acidity (23G)	----	2	mole H+ / t	----	69	----	81	----
Titrateable Sulfidic Acidity (23H)	----	2	mole H+ / t	----	10	----	13	----
sulfidic - Titrateable Actual Acidity (s-23F)	----	0.020	% pyrite S	----	0.095	----	0.109	----
sulfidic - Titrateable Peroxide Acidity (s-23G)	----	0.020	% pyrite S	----	0.111	----	0.130	----
sulfidic - Titrateable Sulfidic Acidity (s-23H)	----	0.020	% pyrite S	----	<0.020	----	0.021	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.020	% S	----	0.028	----	0.053	----
Peroxide Sulfur (23De)	----	0.020	% S	----	0.039	----	0.064	----
Peroxide Oxidisable Sulfur (23E)	----	0.020	% S	----	<0.020	----	<0.020	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	----	<10	----	<10	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.020	% Ca	----	0.152	----	0.073	----
Peroxide Calcium (23Wh)	----	0.020	% Ca	----	0.154	----	0.076	----
Acid Reacted Calcium (23X)	----	0.020	% Ca	----	<0.020	----	<0.020	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	----	<10	----	<10	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.020	% S	----	<0.020	----	<0.020	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.020	% Mg	----	0.123	----	0.141	----
Peroxide Magnesium (23Tm)	----	0.020	% Mg	----	0.125	----	0.151	----
Acid Reacted Magnesium (23U)	----	0.020	% Mg	----	<0.020	----	<0.020	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	----	<10	----	<10	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.020	% S	----	<0.020	----	<0.020	----
EA029-G: Retained Acidity								
HCl Extractable Sulfur (20Be)	----	0.020	% S	----	0.045	----	0.066	----
Net Acid Soluble Sulfur (20Je)	----	0.020	% S	----	<0.020	----	<0.020	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	<10	----	<10	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.020	% pyrite S	----	<0.020	----	<0.020	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E	BH309 / 0.4E	BH403 / 0.2E
Client sampling date / time				18-Jul-2019 00:00	18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00	23-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-022	ES1924021-023	ES1924021-024	ES1924021-025	ES1924021-026	
				Result	Result	Result	Result	Result	
EA029-H: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-	----	1.5	----	1.5	----	
Net Acidity (sulfur units)	----	0.02	% S	----	0.12	----	0.13	----	
Net Acidity (acidity units)	----	10	mole H+ / t	----	74	----	81	----	
Liming Rate	----	1	kg CaCO3/t	----	6	----	6	----	
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	0.12	----	0.13	----	
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	74	----	81	----	
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	6	----	6	----	
EA037: Ass Field Screening Analysis									
ø pH (F)	----	0.1	pH Unit	----	5.6	----	5.5	----	
ø pH (Fox)	----	0.1	pH Unit	----	4.3	----	4.2	----	
ø Reaction Rate	----	1	-	----	2	----	2	----	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	----	----	19.4	----	14.1	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----	
Asbestos (Trace)	1332-21-4	5	Fibres	No	----	----	----	----	
Asbestos Type	1332-21-4	-	--	-	----	----	----	----	
Sample weight (dry)	----	0.01	g	43.1	----	----	----	----	
APPROVED IDENTIFIER:	----	-	--	A. SMYLLIE	----	----	----	----	
Synthetic Mineral Fibre	----	0.1	g/kg	No	----	----	----	----	
Organic Fibre	----	0.1	g/kg	No	----	----	----	----	
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	----	----	12	----	8	
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	<1	
Chromium	7440-47-3	2	mg/kg	----	----	18	----	5	
Copper	7440-50-8	5	mg/kg	----	----	26	----	29	
Lead	7439-92-1	5	mg/kg	----	----	15	----	23	
Nickel	7440-02-0	2	mg/kg	----	----	9	----	10	
Zinc	7440-66-6	5	mg/kg	----	----	36	----	47	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	----	<0.1	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	<0.1	
EP074A: Monocyclic Aromatic Hydrocarbons									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID				
Client sampling date / time				BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E	BH309 / 0.4E	BH403 / 0.2E
Compound				ES1924021-022	ES1924021-023	ES1924021-024	ES1924021-025	ES1924021-026
CAS Number LOR Unit				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	----	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg	----	----	<0.5	----	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg	----	----	<0.5	----	<0.5
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	----	----	<0.5	----	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg	----	----	<0.5	----	<0.5
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	----	----	<0.5	----	<0.5
tert-Butylbenzene	98-06-6	0.5	mg/kg	----	----	<0.5	----	<0.5
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	----	<0.5	----	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg	----	----	<0.5	----	<0.5
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	5	mg/kg	----	----	<5	----	<5
2-Butanone (MEK)	78-93-3	5	mg/kg	----	----	<5	----	<5
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	----	----	<5	----	<5
2-Hexanone (MBK)	591-78-6	5	mg/kg	----	----	<5	----	<5
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	0.5	mg/kg	----	----	<0.5	----	<0.5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	----	----	<0.5	----	<0.5
1,2-Dichloropropane	78-87-5	0.5	mg/kg	----	----	<0.5	----	<0.5
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	----	----	<0.5	----	<0.5
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	----	----	<0.5	----	<0.5
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	----	----	<0.5	----	<0.5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	5	mg/kg	----	----	<5	----	<5
Chloromethane	74-87-3	5	mg/kg	----	----	<5	----	<5
Vinyl chloride	75-01-4	5	mg/kg	----	----	<5	----	<5
Bromomethane	74-83-9	5	mg/kg	----	----	<5	----	<5
Chloroethane	75-00-3	5	mg/kg	----	----	<5	----	<5
Trichlorofluoromethane	75-69-4	5	mg/kg	----	----	<5	----	<5
1,1-Dichloroethene	75-35-4	0.5	mg/kg	----	----	<0.5	----	<0.5
Iodomethane	74-88-4	0.5	mg/kg	----	----	<0.5	----	<0.5
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	----	----	<0.5	----	<0.5
1,1-Dichloroethane	75-34-3	0.5	mg/kg	----	----	<0.5	----	<0.5
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	----	----	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E	BH309 / 0.4E	BH403 / 0.2E
Client sampling date / time				18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00	23-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-022	ES1924021-023	ES1924021-024	ES1924021-025	ES1924021-026
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	----	----	<0.5	----	<0.5
1.1-Dichloropropylene	563-58-6	0.5	mg/kg	----	----	<0.5	----	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg	----	----	<0.5	----	<0.5
1.2-Dichloroethane	107-06-2	0.5	mg/kg	----	----	<0.5	----	<0.5
Trichloroethene	79-01-6	0.5	mg/kg	----	----	<0.5	----	<0.5
Dibromomethane	74-95-3	0.5	mg/kg	----	----	<0.5	----	<0.5
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	----	----	<0.5	----	<0.5
1.3-Dichloropropane	142-28-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Tetrachloroethene	127-18-4	0.5	mg/kg	----	----	<0.5	----	<0.5
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	----	----	<0.5	----	<0.5
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	----	----	<0.5	----	<0.5
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	----	----	<0.5	----	<0.5
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	----	----	<0.5	----	<0.5
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	----	----	<0.5	----	<0.5
Pentachloroethane	76-01-7	0.5	mg/kg	----	----	<0.5	----	<0.5
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	----	----	<0.5	----	<0.5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Bromobenzene	108-86-1	0.5	mg/kg	----	----	<0.5	----	<0.5
2-Chlorotoluene	95-49-8	0.5	mg/kg	----	----	<0.5	----	<0.5
4-Chlorotoluene	106-43-4	0.5	mg/kg	----	----	<0.5	----	<0.5
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	----	----	<0.5	----	<0.5
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Bromodichloromethane	75-27-4	0.5	mg/kg	----	----	<0.5	----	<0.5
Dibromochloromethane	124-48-1	0.5	mg/kg	----	----	<0.5	----	<0.5
Bromoform	75-25-2	0.5	mg/kg	----	----	<0.5	----	<0.5
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



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E	BH309 / 0.4E	BH403 / 0.2E
Client sampling date / time				18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00	23-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-022	ES1924021-023	ES1924021-024	ES1924021-025	ES1924021-026
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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
EP075A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	<0.5	----	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	<0.5	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	<0.5	----	<0.5
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	----	----	<0.5	----	<0.5
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	<0.5	----	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	<0.5	----	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	<0.5	----	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	<0.5	----	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	----	<0.5	----	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	<0.5	----	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	<0.5	----	<0.5
Pentachlorophenol	87-86-5	1	mg/kg	----	----	<1	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
2-Methylnaphthalene	91-57-6	0.5	mg/kg	----	----	<0.5	----	<0.5
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	----	----	<0.5	----	<0.5
7,12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	----	----	<0.5	----	<0.5
3-Methylcholanthrene	56-49-5	0.5	mg/kg	----	----	<0.5	----	<0.5
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	0.5	mg/kg	----	----	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E	BH309 / 0.4E	BH403 / 0.2E
Client sampling date / time					18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00	23-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-022	ES1924021-023	ES1924021-024	ES1924021-025	ES1924021-026
					Result	Result	Result	Result	Result
EP075C: Phthalate Esters - Continued									
Diethyl phthalate	84-66-2	0.5	mg/kg		----	----	<0.5	----	<0.5
Di-n-butyl phthalate	84-74-2	0.5	mg/kg		----	----	<0.5	----	<0.5
Butyl benzyl phthalate	85-68-7	0.5	mg/kg		----	----	<0.5	----	<0.5
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg		----	----	<5.0	----	<5.0
Di-n-octylphthalate	117-84-0	0.5	mg/kg		----	----	<0.5	----	<0.5
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg		----	----	<0.5	----	<0.5
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg		----	----	<0.5	----	<0.5
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg		----	----	<1.0	----	<1.0
N-Nitrosomorpholine	59-89-2	0.5	mg/kg		----	----	<0.5	----	<0.5
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg		----	----	<0.5	----	<0.5
N-Nitrosopiperidine	100-75-4	0.5	mg/kg		----	----	<0.5	----	<0.5
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg		----	----	<0.5	----	<0.5
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg		----	----	<1.0	----	<1.0
Methapyrilene	91-80-5	0.5	mg/kg		----	----	<0.5	----	<0.5
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Acetophenone	98-86-2	0.5	mg/kg		----	----	<0.5	----	<0.5
Nitrobenzene	98-95-3	0.5	mg/kg		----	----	<0.5	----	<0.5
Isophorone	78-59-1	0.5	mg/kg		----	----	<0.5	----	<0.5
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg		----	----	<1.0	----	<1.0
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg		----	----	<1.0	----	<1.0
1-Naphthylamine	134-32-7	0.5	mg/kg		----	----	<0.5	----	<0.5
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg		----	----	<0.5	----	<0.5
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Azobenzene	103-33-3	1	mg/kg		----	----	<1	----	<1
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg		----	----	<0.5	----	<0.5
Phenacetin	62-44-2	0.5	mg/kg		----	----	<0.5	----	<0.5
4-Aminobiphenyl	92-67-1	0.5	mg/kg		----	----	<0.5	----	<0.5
Pentachloronitrobenzene	82-68-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Pronamide	23950-58-5	0.5	mg/kg		----	----	<0.5	----	<0.5
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg		----	----	<0.5	----	<0.5
Chlorobenzilate	510-15-6	0.5	mg/kg		----	----	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E	BH309 / 0.4E	BH403 / 0.2E
Client sampling date / time					18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00	23-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-022	ES1924021-023	ES1924021-024	ES1924021-025	ES1924021-026
					Result	Result	Result	Result	Result
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg		----	----	<0.5	----	<0.5
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg		----	----	<0.5	----	<0.5
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg		----	----	<0.5	----	<0.5
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg		----	----	<0.5	----	<0.5
EP075G: Chlorinated Hydrocarbons									
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg		----	----	<0.5	----	<0.5
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg		----	----	<0.5	----	<0.5
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg		----	----	<0.5	----	<0.5
Hexachloroethane	67-72-1	0.5	mg/kg		----	----	<0.5	----	<0.5
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg		----	----	<0.5	----	<0.5
Hexachloropropylene	1888-71-7	0.5	mg/kg		----	----	<0.5	----	<0.5
Hexachlorobutadiene	87-68-3	0.5	mg/kg		----	----	<0.5	----	<0.5
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg		----	----	<2.5	----	<2.5
Pentachlorobenzene	608-93-5	0.5	mg/kg		----	----	<0.5	----	<0.5
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg		----	----	<1.0	----	<1.0
EP075H: Anilines and Benzidines									
Aniline	62-53-3	0.5	mg/kg		----	----	<0.5	----	<0.5
4-Chloroaniline	106-47-8	0.5	mg/kg		----	----	<0.5	----	<0.5
2-Nitroaniline	88-74-4	1.0	mg/kg		----	----	<1.0	----	<1.0
3-Nitroaniline	99-09-2	1.0	mg/kg		----	----	<1.0	----	<1.0
Dibenzofuran	132-64-9	0.5	mg/kg		----	----	<0.5	----	<0.5
4-Nitroaniline	100-01-6	0.5	mg/kg		----	----	<0.5	----	<0.5
Carbazole	86-74-8	0.5	mg/kg		----	----	<0.5	----	<0.5
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg		----	----	<0.5	----	<0.5
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	mg/kg		----	----	<0.5	----	<0.5
beta-BHC	319-85-7	0.5	mg/kg		----	----	<0.5	----	<0.5
gamma-BHC	58-89-9	0.5	mg/kg		----	----	<0.5	----	<0.5
delta-BHC	319-86-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Heptachlor	76-44-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Aldrin	309-00-2	0.5	mg/kg		----	----	<0.5	----	<0.5
Heptachlor epoxide	1024-57-3	0.5	mg/kg		----	----	<0.5	----	<0.5
alpha-Endosulfan	959-98-8	0.5	mg/kg		----	----	<0.5	----	<0.5
4,4'-DDE	72-55-9	0.5	mg/kg		----	----	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID				
Client sampling date / time				BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E	BH309 / 0.4E	BH403 / 0.2E
Compound				ES1924021-022	ES1924021-023	ES1924021-024	ES1924021-025	ES1924021-026
CAS Number LOR Unit				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
Dieldrin	60-57-1	0.5	mg/kg	----	----	<0.5	----	<0.5
Endrin	72-20-8	0.5	mg/kg	----	----	<0.5	----	<0.5
beta-Endosulfan	33213-65-9	0.5	mg/kg	----	----	<0.5	----	<0.5
4,4`-DDD	72-54-8	0.5	mg/kg	----	----	<0.5	----	<0.5
Endosulfan sulfate	1031-07-8	0.5	mg/kg	----	----	<0.5	----	<0.5
4,4`-DDT	50-29-3	1.0	mg/kg	----	----	<1.0	----	<1.0
EP075J: Organophosphorus Pesticides								
Dichlorvos	62-73-7	0.5	mg/kg	----	----	<0.5	----	<0.5
Dimethoate	60-51-5	0.5	mg/kg	----	----	<0.5	----	<0.5
Diazinon	333-41-5	0.5	mg/kg	----	----	<0.5	----	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	----	----	<0.5	----	<0.5
Malathion	121-75-5	0.5	mg/kg	----	----	<0.5	----	<0.5
Fenthion	55-38-9	0.5	mg/kg	----	----	<0.5	----	<0.5
Chlorpyrifos	2921-88-2	0.5	mg/kg	----	----	<0.5	----	<0.5
Pirimphos-ethyl	23505-41-1	0.5	mg/kg	----	----	<0.5	----	<0.5
Chlorfenvinphos	470-90-6	0.5	mg/kg	----	----	<0.5	----	<0.5
Prothiofos	34643-46-4	0.5	mg/kg	----	----	<0.5	----	<0.5
Ethion	563-12-2	0.5	mg/kg	----	----	<0.5	----	<0.5
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
^ 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

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID		BH307 / 0.5E		BH307 / 0.5E		BH309 / 0.4E		BH309 / 0.4E		BH403 / 0.2E	
Client sampling date / time				18-Jul-2019 00:00		18-Jul-2019 00:00		23-Jul-2019 00:00		23-Jul-2019 00:00		10-Jul-2019 00:00			
Compound	CAS Number	LOR	Unit	ES1924021-022		ES1924021-023		ES1924021-024		ES1924021-025		ES1924021-026			
				Result		Result		Result		Result		Result			
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			
^ Sum of BTEX	----	0.2	mg/kg	----		----		<0.2		----		<0.2			
^ Total Xylenes	----	0.5	mg/kg	----		----		<0.5		----		<0.5			
Naphthalene	91-20-3	1	mg/kg	----		----		<1		----		<1			
EP066S: PCB Surrogate															
Decachlorobiphenyl	2051-24-3	0.1	%	----		----		96.4		----		103			
EP074S: VOC Surrogates															
1,2-Dichloroethane-D4	17060-07-0	0.5	%	----		----		95.7		----		92.3			
Toluene-D8	2037-26-5	0.5	%	----		----		106		----		92.0			
4-Bromofluorobenzene	460-00-4	0.5	%	----		----		90.7		----		82.6			
EP075(SIM)S: Phenolic Compound Surrogates															
Phenol-d6	13127-88-3	0.5	%	----		----		84.1		----		83.5			
2-Chlorophenol-D4	93951-73-6	0.5	%	----		----		90.9		----		91.0			
2,4,6-Tribromophenol	118-79-6	0.5	%	----		----		66.9		----		64.7			
EP075(SIM)T: PAH Surrogates															
2-Fluorobiphenyl	321-60-8	0.5	%	----		----		95.8		----		96.9			
Anthracene-d10	1719-06-8	0.5	%	----		----		99.9		----		100			
4-Terphenyl-d14	1718-51-0	0.5	%	----		----		102		----		101			
EP075S: Acid Extractable Surrogates															
2-Fluorophenol	367-12-4	0.5	%	----		----		104		----		92.3			
Phenol-d6	13127-88-3	0.5	%	----		----		101		----		95.3			
2-Chlorophenol-D4	93951-73-6	0.5	%	----		----		110		----		99.1			
2,4,6-Tribromophenol	118-79-6	0.5	%	----		----		66.1		----		69.1			
EP075T: Base/Neutral Extractable Surrogates															
Nitrobenzene-D5	4165-60-0	0.5	%	----		----		90.6		----		86.4			
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%	----		----		105		----		101			
2-Fluorobiphenyl	321-60-8	0.5	%	----		----		122		----		120			
Anthracene-d10	1719-06-8	0.5	%	----		----		94.3		----		92.2			
4-Terphenyl-d14	1718-51-0	0.5	%	----		----		120		----		116			
EP080S: TPH(V)/BTEX Surrogates															



Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Client sample ID

				BH307 / 0.5E	BH307 / 0.5E	BH309 / 0.4E	BH309 / 0.4E	BH403 / 0.2E
Client sampling date / time				18-Jul-2019 00:00	18-Jul-2019 00:00	23-Jul-2019 00:00	23-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-022	ES1924021-023	ES1924021-024	ES1924021-025	ES1924021-026
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	95.5	----	92.0
Toluene-D8	2037-26-5	0.2	%	----	----	83.8	----	75.3
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	87.2	----	80.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	ES1924021-031
				Result	Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	8.2	----	----	----	6.6	----
Moisture Content	----	1.0	%	----	----	9.4	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	----	----	----	No
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	----	----	----	No
Asbestos Type	1332-21-4	-	--	----	-	----	----	----	-
Sample weight (dry)	----	0.01	g	----	48.1	----	----	----	51.8
APPROVED IDENTIFIER:	----	-	--	----	A. SMYLLIE	----	----	----	A. SMYLLIE
Synthetic Mineral Fibre	----	0.1	g/kg	----	No	----	----	----	No
Organic Fibre	----	0.1	g/kg	----	No	----	----	----	No
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	----	----	6	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	13	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	75	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	49	----	----	----
Nickel	7440-02-0	2	mg/kg	----	----	44	----	----	----
Zinc	7440-66-6	5	mg/kg	----	----	107	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	----	----	<0.5	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	----	----	<0.5	----	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	----	----	<0.5	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	----	----	<0.5	----	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	----	----	<0.5	----	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	----	----	<0.5	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	----	<0.5	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	----	----	<0.5	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	----	----	<5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	ES1924021-031
					Result	Result	Result	Result	Result
EP074B: Oxygenated Compounds - Continued									
2-Butanone (MEK)	78-93-3	5	mg/kg		----	----	<5	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		----	----	<5	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg		----	----	<5	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		----	----	<0.5	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		----	----	<0.5	----	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg		----	----	<0.5	----	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		----	----	<0.5	----	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		----	----	<0.5	----	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		----	----	<0.5	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		----	----	<5	----	----
Chloromethane	74-87-3	5	mg/kg		----	----	<5	----	----
Vinyl chloride	75-01-4	5	mg/kg		----	----	<5	----	----
Bromomethane	74-83-9	5	mg/kg		----	----	<5	----	----
Chloroethane	75-00-3	5	mg/kg		----	----	<5	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg		----	----	<5	----	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		----	----	<0.5	----	----
Iodomethane	74-88-4	0.5	mg/kg		----	----	<0.5	----	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		----	----	<0.5	----	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg		----	----	<0.5	----	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		----	----	<0.5	----	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		----	----	<0.5	----	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		----	----	<0.5	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		----	----	<0.5	----	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg		----	----	<0.5	----	----
Trichloroethene	79-01-6	0.5	mg/kg		----	----	<0.5	----	----
Dibromomethane	74-95-3	0.5	mg/kg		----	----	<0.5	----	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		----	----	<0.5	----	----
1,3-Dichloropropane	142-28-9	0.5	mg/kg		----	----	<0.5	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg		----	----	<0.5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg		----	----	<0.5	----	----
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg		----	----	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time				10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	ES1924021-031
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	----	----	<0.5	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	----	----	<0.5	----	----
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	----	----	<0.5	----	----
Pentachloroethane	76-01-7	0.5	mg/kg	----	----	<0.5	----	----
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	----	----	<0.5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	----	----	<0.5	----	----
Bromobenzene	108-86-1	0.5	mg/kg	----	----	<0.5	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	----	----	<0.5	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	----	----	<0.5	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	----	----	<0.5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	----	----	<0.5	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg	----	----	<0.5	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg	----	----	<0.5	----	----
Bromoform	75-25-2	0.5	mg/kg	----	----	<0.5	----	----
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	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	ES1924021-031
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ 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	----	----
EP075A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg		----	----	<0.5	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	----	<0.5	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg		----	----	<0.5	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg		----	----	<0.5	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg		----	----	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	<0.5	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	<0.5	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	<0.5	----	----
Pentachlorophenol	87-86-5	1	mg/kg		----	----	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
2-Methylnaphthalene	91-57-6	0.5	mg/kg		----	----	<0.5	----	----
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg		----	----	<0.5	----	----
7,12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg		----	----	<0.5	----	----
3-Methylcholanthrene	56-49-5	0.5	mg/kg		----	----	<0.5	----	----
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	0.5	mg/kg		----	----	<0.5	----	----
Diethyl phthalate	84-66-2	0.5	mg/kg		----	----	<0.5	----	----
Di-n-butyl phthalate	84-74-2	0.5	mg/kg		----	----	<0.5	----	----
Butyl benzyl phthalate	85-68-7	0.5	mg/kg		----	----	<0.5	----	----
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg		----	----	<5.0	----	----
Di-n-octylphthalate	117-84-0	0.5	mg/kg		----	----	<0.5	----	----
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg		----	----	<0.5	----	----
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg		----	----	<0.5	----	----
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg		----	----	<1.0	----	----
N-Nitrosomorpholine	59-89-2	0.5	mg/kg		----	----	<0.5	----	----
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg		----	----	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time				10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	ES1924021-031
				Result	Result	Result	Result	Result
EP075D: Nitrosamines - Continued								
N-Nitrosopiperidine	100-75-4	0.5	mg/kg	----	----	<0.5	----	----
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	----	----	<0.5	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg	----	----	<1.0	----	----
Methapyrilene	91-80-5	0.5	mg/kg	----	----	<0.5	----	----
EP075E: Nitroaromatics and Ketones								
2-Picoline	109-06-8	0.5	mg/kg	----	----	<0.5	----	----
Acetophenone	98-86-2	0.5	mg/kg	----	----	<0.5	----	----
Nitrobenzene	98-95-3	0.5	mg/kg	----	----	<0.5	----	----
Isophorone	78-59-1	0.5	mg/kg	----	----	<0.5	----	----
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg	----	----	<1.0	----	----
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg	----	----	<1.0	----	----
1-Naphthylamine	134-32-7	0.5	mg/kg	----	----	<0.5	----	----
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	----	----	<0.5	----	----
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	----	----	<0.5	----	----
Azobenzene	103-33-3	1	mg/kg	----	----	<1	----	----
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	----	----	<0.5	----	----
Phenacetin	62-44-2	0.5	mg/kg	----	----	<0.5	----	----
4-Aminobiphenyl	92-67-1	0.5	mg/kg	----	----	<0.5	----	----
Pentachloronitrobenzene	82-68-8	0.5	mg/kg	----	----	<0.5	----	----
Pronamide	23950-58-5	0.5	mg/kg	----	----	<0.5	----	----
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	----	----	<0.5	----	----
Chlorobenzilate	510-15-6	0.5	mg/kg	----	----	<0.5	----	----
EP075F: Haloethers								
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	----	----	<0.5	----	----
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	----	----	<0.5	----	----
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	----	----	<0.5	----	----
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	----	----	<0.5	----	----
EP075G: Chlorinated Hydrocarbons								
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	----	----	<0.5	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	----	----	<0.5	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	----	----	<0.5	----	----
Hexachloroethane	67-72-1	0.5	mg/kg	----	----	<0.5	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	----	----	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	ES1924021-031
					Result	Result	Result	Result	Result
EP075G: Chlorinated Hydrocarbons - Continued									
Hexachloropropylene	1888-71-7	0.5	mg/kg		----	----	<0.5	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg		----	----	<0.5	----	----
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg		----	----	<2.5	----	----
Pentachlorobenzene	608-93-5	0.5	mg/kg		----	----	<0.5	----	----
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg		----	----	<1.0	----	----
EP075H: Anilines and Benzidines									
Aniline	62-53-3	0.5	mg/kg		----	----	<0.5	----	----
4-Chloroaniline	106-47-8	0.5	mg/kg		----	----	<0.5	----	----
2-Nitroaniline	88-74-4	1.0	mg/kg		----	----	<1.0	----	----
3-Nitroaniline	99-09-2	1.0	mg/kg		----	----	<1.0	----	----
Dibenzofuran	132-64-9	0.5	mg/kg		----	----	<0.5	----	----
4-Nitroaniline	100-01-6	0.5	mg/kg		----	----	<0.5	----	----
Carbazole	86-74-8	0.5	mg/kg		----	----	<0.5	----	----
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg		----	----	<0.5	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	mg/kg		----	----	<0.5	----	----
beta-BHC	319-85-7	0.5	mg/kg		----	----	<0.5	----	----
gamma-BHC	58-89-9	0.5	mg/kg		----	----	<0.5	----	----
delta-BHC	319-86-8	0.5	mg/kg		----	----	<0.5	----	----
Heptachlor	76-44-8	0.5	mg/kg		----	----	<0.5	----	----
Aldrin	309-00-2	0.5	mg/kg		----	----	<0.5	----	----
Heptachlor epoxide	1024-57-3	0.5	mg/kg		----	----	<0.5	----	----
alpha-Endosulfan	959-98-8	0.5	mg/kg		----	----	<0.5	----	----
4,4'-DDE	72-55-9	0.5	mg/kg		----	----	<0.5	----	----
Dieldrin	60-57-1	0.5	mg/kg		----	----	<0.5	----	----
Endrin	72-20-8	0.5	mg/kg		----	----	<0.5	----	----
beta-Endosulfan	33213-65-9	0.5	mg/kg		----	----	<0.5	----	----
4,4'-DDD	72-54-8	0.5	mg/kg		----	----	<0.5	----	----
Endosulfan sulfate	1031-07-8	0.5	mg/kg		----	----	<0.5	----	----
4,4'-DDT	50-29-3	1.0	mg/kg		----	----	<1.0	----	----
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	0.5	mg/kg		----	----	<0.5	----	----
Dimethoate	60-51-5	0.5	mg/kg		----	----	<0.5	----	----
Diazinon	333-41-5	0.5	mg/kg		----	----	<0.5	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time				10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	ES1924021-031	
				Result	Result	Result	Result	Result	
EP075J: Organophosphorus Pesticides - Continued									
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	----	----	<0.5	----	----	
Malathion	121-75-5	0.5	mg/kg	----	----	<0.5	----	----	
Fenthion	55-38-9	0.5	mg/kg	----	----	<0.5	----	----	
Chlorpyrifos	2921-88-2	0.5	mg/kg	----	----	<0.5	----	----	
Pirimphos-ethyl	23505-41-1	0.5	mg/kg	----	----	<0.5	----	----	
Chlorfenvinphos	470-90-6	0.5	mg/kg	----	----	<0.5	----	----	
Prothiofos	34643-46-4	0.5	mg/kg	----	----	<0.5	----	----	
Ethion	563-12-2	0.5	mg/kg	----	----	<0.5	----	----	
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	----	----	
^ 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	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	----	0.5	mg/kg	----	----	<0.5	----	----	
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	ES1924021-031
				Result	Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
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)	335-77-3	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	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time				10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	ES1924021-031	
				Result	Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	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	----	
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	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	----	----	<0.0002	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	<0.0002	----	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	104	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	----	----	98.7	----	----	
Toluene-D8	2037-26-5	0.5	%	----	----	99.4	----	----	
4-Bromofluorobenzene	460-00-4	0.5	%	----	----	87.8	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	----	----	81.6	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	88.4	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	----	----	63.9	----	----	
EP075(SIM)T: PAH Surrogates									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH403 / 0.2E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.1E	BH404 / 0.1E
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924021-027	ES1924021-028	ES1924021-029	ES1924021-030	ES1924021-031
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	94.3	----	----
Anthracene-d10	1719-06-8	0.5	%		----	----	96.0	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	97.7	----	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		----	----	96.1	----	----
Phenol-d6	13127-88-3	0.5	%		----	----	89.2	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	95.7	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		----	----	63.8	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		----	----	82.5	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		----	----	93.4	----	----
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	117	----	----
Anthracene-d10	1719-06-8	0.5	%		----	----	89.9	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	112	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	98.4	----	----
Toluene-D8	2037-26-5	0.2	%		----	----	78.7	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	84.8	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		76.5	----	----	88.5	----
13C8-PFOA	----	0.0002	%		70.0	----	----	97.0	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1924021-032	ES1924021-033	ES1924021-034	-----	-----
					Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		----	12.0	----	----	----
Moisture Content	----	1.0	%		12.8	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	No	----	----
Asbestos (Trace)	1332-21-4	5	Fibres		----	----	No	----	----
Asbestos Type	1332-21-4	-	--		----	----	-	----	----
Sample weight (dry)	----	0.01	g		----	----	28.1	----	----
APPROVED IDENTIFIER:	----	-	--		----	----	A. SMYLIE	----	----
Synthetic Mineral Fibre	----	0.1	g/kg		----	----	No	----	----
Organic Fibre	----	0.1	g/kg		----	----	No	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		11	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg		26	----	----	----	----
Copper	7440-50-8	5	mg/kg		52	----	----	----	----
Lead	7439-92-1	5	mg/kg		217	----	----	----	----
Nickel	7440-02-0	2	mg/kg		30	----	----	----	----
Zinc	7440-66-6	5	mg/kg		230	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.3	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg		<0.5	----	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg		<0.5	----	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg		<0.5	----	----	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg		<0.5	----	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg		<0.5	----	----	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg		<0.5	----	----	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg		<0.5	----	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg		<0.5	----	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg		<0.5	----	----	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg		<5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1924021-032	ES1924021-033	ES1924021-034	-----	-----
				Result	Result	Result		----	----
EP074B: Oxygenated Compounds - Continued									
2-Butanone (MEK)	78-93-3	5	mg/kg		<5	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg		<5	----	----	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg		<5	----	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg		<0.5	----	----	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg		<0.5	----	----	----	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg		<0.5	----	----	----	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg		<0.5	----	----	----	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg		<0.5	----	----	----	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg		<0.5	----	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg		<5	----	----	----	----
Chloromethane	74-87-3	5	mg/kg		<5	----	----	----	----
Vinyl chloride	75-01-4	5	mg/kg		<5	----	----	----	----
Bromomethane	74-83-9	5	mg/kg		<5	----	----	----	----
Chloroethane	75-00-3	5	mg/kg		<5	----	----	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg		<5	----	----	----	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg		<0.5	----	----	----	----
Iodomethane	74-88-4	0.5	mg/kg		<0.5	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg		<0.5	----	----	----	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg		<0.5	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg		<0.5	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg		<0.5	----	----	----	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg		<0.5	----	----	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg		<0.5	----	----	----	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg		<0.5	----	----	----	----
Trichloroethene	79-01-6	0.5	mg/kg		<0.5	----	----	----	----
Dibromomethane	74-95-3	0.5	mg/kg		<0.5	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg		<0.5	----	----	----	----
1,3-Dichloropropane	142-28-9	0.5	mg/kg		<0.5	----	----	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg		<0.5	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg		<0.5	----	----	----	----
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1924021-032	ES1924021-033	ES1924021-034	-----	-----
				Result	Result	Result		----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg		<0.5	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg		<0.5	----	----	----	----
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg		<0.5	----	----	----	----
Pentachloroethane	76-01-7	0.5	mg/kg		<0.5	----	----	----	----
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg		<0.5	----	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg		<0.5	----	----	----	----
Bromobenzene	108-86-1	0.5	mg/kg		<0.5	----	----	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg		<0.5	----	----	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg		<0.5	----	----	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg		<0.5	----	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg		<0.5	----	----	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg		<0.5	----	----	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg		<0.5	----	----	----	----
Bromoform	75-25-2	0.5	mg/kg		<0.5	----	----	----	----
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	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1924021-032	ES1924021-033	ES1924021-034	-----	-----
				Result	Result	Result		----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ 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	----	----	----	----
EP075A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg		<0.5	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	----	----
Pentachlorophenol	87-86-5	1	mg/kg		<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
2-Methylnaphthalene	91-57-6	0.5	mg/kg		<0.5	----	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg		<0.5	----	----	----	----
7,12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg		<0.5	----	----	----	----
3-Methylcholanthrene	56-49-5	0.5	mg/kg		<0.5	----	----	----	----
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	0.5	mg/kg		<0.5	----	----	----	----
Diethyl phthalate	84-66-2	0.5	mg/kg		<0.5	----	----	----	----
Di-n-butyl phthalate	84-74-2	0.5	mg/kg		<0.5	----	----	----	----
Butyl benzyl phthalate	85-68-7	0.5	mg/kg		<0.5	----	----	----	----
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg		<5.0	----	----	----	----
Di-n-octylphthalate	117-84-0	0.5	mg/kg		<0.5	----	----	----	----
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg		<0.5	----	----	----	----
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg		<0.5	----	----	----	----
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg		<1.0	----	----	----	----
N-Nitrosomorpholine	59-89-2	0.5	mg/kg		<0.5	----	----	----	----
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1924021-032	ES1924021-033	ES1924021-034	-----	-----
					Result	Result	Result	----	----
EP075D: Nitrosamines - Continued									
N-Nitrosopiperidine	100-75-4	0.5	mg/kg		<0.5	----	----	----	----
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg		<0.5	----	----	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg		<1.0	----	----	----	----
Methapyrilene	91-80-5	0.5	mg/kg		<0.5	----	----	----	----
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	0.5	mg/kg		<0.5	----	----	----	----
Acetophenone	98-86-2	0.5	mg/kg		<0.5	----	----	----	----
Nitrobenzene	98-95-3	0.5	mg/kg		<0.5	----	----	----	----
Isophorone	78-59-1	0.5	mg/kg		<0.5	----	----	----	----
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg		<1.0	----	----	----	----
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg		<1.0	----	----	----	----
1-Naphthylamine	134-32-7	0.5	mg/kg		<0.5	----	----	----	----
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg		<0.5	----	----	----	----
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg		<0.5	----	----	----	----
Azobenzene	103-33-3	1	mg/kg		<1	----	----	----	----
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg		<0.5	----	----	----	----
Phenacetin	62-44-2	0.5	mg/kg		<0.5	----	----	----	----
4-Aminobiphenyl	92-67-1	0.5	mg/kg		<0.5	----	----	----	----
Pentachloronitrobenzene	82-68-8	0.5	mg/kg		<0.5	----	----	----	----
Pronamide	23950-58-5	0.5	mg/kg		<0.5	----	----	----	----
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg		<0.5	----	----	----	----
Chlorobenzilate	510-15-6	0.5	mg/kg		<0.5	----	----	----	----
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg		<0.5	----	----	----	----
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg		<0.5	----	----	----	----
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg		<0.5	----	----	----	----
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg		<0.5	----	----	----	----
EP075G: Chlorinated Hydrocarbons									
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg		<0.5	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg		<0.5	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg		<0.5	----	----	----	----
Hexachloroethane	67-72-1	0.5	mg/kg		<0.5	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----	----
Client sampling date / time				10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1924021-032	ES1924021-033	ES1924021-034	-----	-----
				Result	Result	Result	----	----

EP075G: Chlorinated Hydrocarbons - Continued

Hexachloropropylene	1888-71-7	0.5	mg/kg	<0.5	----	----	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	----	----	----	----
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	<2.5	----	----	----	----
Pentachlorobenzene	608-93-5	0.5	mg/kg	<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg	<1.0	----	----	----	----

EP075H: Anilines and Benzidines

Aniline	62-53-3	0.5	mg/kg	<0.5	----	----	----	----
4-Chloroaniline	106-47-8	0.5	mg/kg	<0.5	----	----	----	----
2-Nitroaniline	88-74-4	1.0	mg/kg	<1.0	----	----	----	----
3-Nitroaniline	99-09-2	1.0	mg/kg	<1.0	----	----	----	----
Dibenzofuran	132-64-9	0.5	mg/kg	<0.5	----	----	----	----
4-Nitroaniline	100-01-6	0.5	mg/kg	<0.5	----	----	----	----
Carbazole	86-74-8	0.5	mg/kg	<0.5	----	----	----	----
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg	<0.5	----	----	----	----

EP075I: Organochlorine Pesticides

alpha-BHC	319-84-6	0.5	mg/kg	<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	mg/kg	<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	mg/kg	<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	mg/kg	<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	mg/kg	<0.5	----	----	----	----
Aldrin	309-00-2	0.5	mg/kg	<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	mg/kg	<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	mg/kg	<0.5	----	----	----	----
4,4'-DDE	72-55-9	0.5	mg/kg	<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	mg/kg	<0.5	----	----	----	----
Endrin	72-20-8	0.5	mg/kg	<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	mg/kg	<0.5	----	----	----	----
4,4'-DDD	72-54-8	0.5	mg/kg	<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	mg/kg	<0.5	----	----	----	----
4,4'-DDT	50-29-3	1.0	mg/kg	<1.0	----	----	----	----

EP075J: Organophosphorus Pesticides

Dichlorvos	62-73-7	0.5	mg/kg	<0.5	----	----	----	----
Dimethoate	60-51-5	0.5	mg/kg	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	mg/kg	<0.5	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----	----
Client sampling date / time				10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----	----	
Compound	CAS Number	LOR	Unit	ES1924021-032	ES1924021-033	ES1924021-034	-----	-----	
				Result	Result	Result	----	----	
EP075J: Organophosphorus Pesticides - Continued									
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	<0.5	----	----	----	----	
Malathion	121-75-5	0.5	mg/kg	<0.5	----	----	----	----	
Fenthion	55-38-9	0.5	mg/kg	<0.5	----	----	----	----	
Chlorpyrifos	2921-88-2	0.5	mg/kg	<0.5	----	----	----	----	
Pirimphos-ethyl	23505-41-1	0.5	mg/kg	<0.5	----	----	----	----	
Chlorfenvinphos	470-90-6	0.5	mg/kg	<0.5	----	----	----	----	
Prothiofos	34643-46-4	0.5	mg/kg	<0.5	----	----	----	----	
Ethion	563-12-2	0.5	mg/kg	<0.5	----	----	----	----	
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	----	----	----	----	
^ 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	----	----	----	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----	
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----	
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	
EP231A: Perfluoroalkyl Sulfonic Acids									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1924021-032	ES1924021-033	ES1924021-034	-----	-----
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
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)	335-77-3	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	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----	----
Client sampling date / time				10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----	----	
Compound	CAS Number	LOR	Unit	ES1924021-032	ES1924021-033	ES1924021-034	-----	-----	
				Result	Result	Result	----	----	
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	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	----	----	----	
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	355-46-4/1763-23-1	0.0002	mg/kg	----	<0.0002	----	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	----	<0.0002	----	----	----	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	93.4	----	----	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	89.0	----	----	----	----	
Toluene-D8	2037-26-5	0.5	%	92.0	----	----	----	----	
4-Bromofluorobenzene	460-00-4	0.5	%	80.8	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	81.1	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	87.5	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	63.7	----	----	----	----	
EP075(SIM)T: PAH Surrogates									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH404 / 0.5E	BH404 / 0.5E	BH404 / 0.5E	----	----
Client sampling date / time					10-Jul-2019 00:00	10-Jul-2019 00:00	10-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1924021-032	ES1924021-033	ES1924021-034	-----	-----
					Result	Result	Result	----	----
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.5	%		93.5	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		96.3	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		98.7	----	----	----	----
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		106	----	----	----	----
Phenol-d6	13127-88-3	0.5	%		98.7	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		102	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		49.7	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		89.5	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		99.1	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.5	%		121	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		91.6	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		116	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		88.8	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		80.9	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		77.4	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	88.5	----	----	----
13C8-PFOA	----	0.0002	%		----	99.0	----	----	----



Analytical Results

Sub-Matrix: TCLP LEACHATE
 (Matrix: WATER)

Client sample ID

				BH301 / 0.15E	BH305 / 0.4E	BH307 / 0.5E	----	----
Client sampling date / time				24-Jul-2019 00:00	20-Jul-2019 00:00	18-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1924021-001	ES1924021-011	ES1924021-020	-----	-----
				Result	Result	Result	----	----
EG005(ED093)C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	<0.1	----	----
Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	<0.05	----	----
Chromium	7440-47-3	0.1	mg/L	<0.1	<0.1	<0.1	----	----
Copper	7440-50-8	0.1	mg/L	0.7	<0.1	<0.1	----	----
Lead	7439-92-1	0.1	mg/L	2.8	<0.1	<0.1	----	----
Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	<0.1	----	----
Zinc	7440-66-6	0.1	mg/L	1.8	0.2	<0.1	----	----
EG035C: Leachable Mercury by FIMS								
Mercury	7439-97-6	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	28.0	27.6	30.2	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	57.2	58.6	69.4	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	74.6	70.7	79.1	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	93.0	89.1	95.8	----	----



Analytical Results

Sub-Matrix: **TCLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				BH301 / 0.15E	BH305 / 0.4E	BH307 / 0.5E	----	----
Client sampling date / time				24-Jul-2019 00:00	20-Jul-2019 00:00	18-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1924021-001	ES1924021-011	ES1924021-020	-----	-----
				Result	Result	Result	----	----
EP075(SIM)T: PAH Surrogates - Continued								
Anthracene-d10	1719-06-8	1.0	%	92.7	97.2	89.4	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	92.9	95.6	97.6	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	BH301 / 0.15E - 24-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH303 / 0.2E - 15-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH304 / 0.7E - 11-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH305 / 0.4E - 20-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH306 / 0.5E - 09-Jul-2019 00:00	Mid brown soil containing several fragments of asbestos cement debris approximately 2x2x2mm and several loose asbestos fibre bundles.
EA200: Description	BH307 / 0.5E - 18-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH403 / 0.2E - 10-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH404 / 0.1E - 10-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH404 / 0.5E - 10-Jul-2019 00:00	Mid brown soil.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	64	130
Toluene-D8	2037-26-5	66	136
4-Bromofluorobenzene	460-00-4	60	122
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	29	149
Phenol-d6	13127-88-3	32	128
2-Chlorophenol-D4	93951-73-6	32	128
2,4,6-Tribromophenol	118-79-6	13	121
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	33	125
1,2-Dichlorobenzene-D4	2199-69-1	34	108
2-Fluorobiphenyl	321-60-8	35	121
Anthracene-d10	1719-06-8	35	123
4-Terphenyl-d14	1718-51-0	33	125
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: TCLP LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125

Page : 80 of 80
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Sub-Matrix: TCLP LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112

QUALITY CONTROL REPORT

Work Order : **ES1924021**

Page : 1 of 26

Amendment : **(Preliminary Report)**

Client : **GOLDER ASSOCIATES**
 Contact : **ERIC WON**
 Address : **LEVEL 1, 124 PACIFIC HIGHWAY**
ST LEONARDS NSW, AUSTRALIA 2065

Laboratory : Environmental Division Sydney
 Contact : Customer Services ES
 Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----
 Project : 19125312
 Order number : 19125312
 C-O-C number : ----
 Sampler : ----
 Site : ----
 Quote number : EN/002/18 National BQ
 No. of samples received : 33
 No. of samples analysed : 33

Telephone : +61-2-8784 8555
 Date Samples Received : 31-Jul-2019
 Date Analysis Commenced : 02-Aug-2019
 Issue Date : 07-Aug-2019



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
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Evie Sidarta	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, 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 (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2504267)									
ES1923655-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	13	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	9	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	15	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
ES1924021-024	BH309 / 0.4E	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	16	11.4	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	12	21.5	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	12	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	26	28	10.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	14	6.89	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	36	43	17.6	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2504270)									
ES1923655-011	Anonymous	EA055: Moisture Content	----	0.1	%	27.8	27.7	0.00	0% - 20%
ES1924021-032	BH404 / 0.5E	EA055: Moisture Content	----	0.1	%	12.8	12.9	0.00	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2505800)									
EM1912116-001	Anonymous	EA055: Moisture Content	----	0.1	%	10.8	10.7	1.18	0% - 20%
ES1924021-012	BH305 / 0.4E	EA055: Moisture Content	----	0.1	%	13.1	13.3	1.76	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2504266)									
ES1923655-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1924021-024	BH309 / 0.4E	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2503659)									

(Preliminary Report)

Page : 3 of 26
Work Order : ES1924021
Client : GOLDR ASSOCIATES
Project : 19125312



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 (%)
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2503659) - continued									
ES1924021-001	BH301 / 0.15E	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1924021-032	BH404 / 0.5E	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 2503952)									
ES1924021-001	BH301 / 0.15E	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1924021-024	BH309 / 0.4E	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 2503952)									
ES1924021-001	BH301 / 0.15E	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
ES1924021-024	BH309 / 0.4E	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 2503952)									
ES1924021-001	BH301 / 0.15E	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1924021-024	BH309 / 0.4E	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074D: Fumigants (QC Lot: 2503952)									
ES1924021-001	BH301 / 0.15E	EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

(Preliminary Report)

Page : 4 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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 (%)
EP074D: Fumigants (QC Lot: 2503952) - continued									
ES1924021-024	BH309 / 0.4E	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2503952)									
ES1924021-001	BH301 / 0.15E	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit
ES1924021-024	BH309 / 0.4E	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

(Preliminary Report)

Page : 5 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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 (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2503952) - continued									
ES1924021-024	BH309 / 0.4E	EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 2503952)									
ES1924021-001	BH301 / 0.15E	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1924021-024	BH309 / 0.4E	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 2503952)									
ES1924021-001	BH301 / 0.15E	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1924021-024	BH309 / 0.4E	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

(Preliminary Report)

Page : 6 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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 (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2503658)									
ES1924021-001	BH301 / 0.15E	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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			205-82-3						
		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): Sum of polycyclic aromatic hydrocarbons	----	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
ES1924021-032	BH404 / 0.5E	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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			205-82-3						
		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): Sum of polycyclic aromatic hydrocarbons	----	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

(Preliminary Report)

Page : 7 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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 (%)
EP075A: Phenolic Compounds (QC Lot: 2503656)									
ES1924021-001	BH301 / 0.15E	EP075: Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pentachlorophenol	87-86-5	1	mg/kg	<1	<1	0.00	No Limit
ES1924021-032	BH404 / 0.5E	EP075: Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pentachlorophenol	87-86-5	1	mg/kg	<1	<1	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2503656)									
ES1924021-001	BH301 / 0.15E	EP075: 2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 7,12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1924021-032	BH404 / 0.5E	EP075: 2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 7,12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075C: Phthalate Esters (QC Lot: 2503656)									
ES1924021-001	BH301 / 0.15E	EP075: Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1924021-032	BH404 / 0.5E	EP075: Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

(Preliminary Report)

Page : 8 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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 (%)
EP075C: Phthalate Esters (QC Lot: 2503656) - continued									
ES1924021-032	BH404 / 0.5E	EP075: Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075D: Nitrosamines (QC Lot: 2503656)									
ES1924021-001	BH301 / 0.15E	EP075: N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosopyrrolidine	930-55-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: Methapyrilene	91-80-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1924021-032	BH404 / 0.5E	EP075: N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosopyrrolidine	930-55-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: Methapyrilene	91-80-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075E: Nitroaromatics and Ketones (QC Lot: 2503656)									
ES1924021-001	BH301 / 0.15E	EP075: 2-Picoline	109-06-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Acetophenone	98-86-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Nitrobenzene	98-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Isophorone	78-59-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,6-Dinitrotoluene	606-20-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: 2,4-Dinitrotoluene	121-14-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: 1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Phenacetin	62-44-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pronamide	23950-58-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

(Preliminary Report)

Page : 9 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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 (%)
EP075E: Nitroaromatics and Ketones (QC Lot: 2503656) - continued									
ES1924021-001	BH301 / 0.15E	EP075: Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Azobenzene	103-33-3	1	mg/kg	<1	<1	0.00	No Limit
ES1924021-032	BH404 / 0.5E	EP075: 2-Picoline	109-06-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Acetophenone	98-86-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Nitrobenzene	98-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Isophorone	78-59-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,6-Dinitrotoluene	606-20-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: 2,4-Dinitrotoluene	121-14-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: 1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Phenacetin	62-44-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pronamide	23950-58-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Azobenzene	103-33-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075F: Haloethers (QC Lot: 2503656)							
ES1924021-001	BH301 / 0.15E	EP075: Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1924021-032	BH404 / 0.5E	EP075: Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075G: Chlorinated Hydrocarbons (QC Lot: 2503656)									
ES1924021-001	BH301 / 0.15E	EP075: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachloroethane	67-72-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachloropropylene	1888-71-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pentachlorobenzene	608-93-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachlorobenzene (HCB)	118-74-1	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
EP075: Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	<2.5	<2.5	0.00	No Limit		

(Preliminary Report)

Page : 10 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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 (%)
EP075G: Chlorinated Hydrocarbons (QC Lot: 2503656) - continued									
ES1924021-032	BH404 / 0.5E	EP075: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachloroethane	67-72-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachloropropylene	1888-71-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pentachlorobenzene	608-93-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachlorobenzene (HCB)	118-74-1	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	<2.5	<2.5	0.00	No Limit
EP075H: Anilines and Benzidines (QC Lot: 2503656)									
ES1924021-001	BH301 / 0.15E	EP075: Aniline	62-53-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Chloroaniline	106-47-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Nitroaniline	88-74-4	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: 3-Nitroaniline	99-09-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: Dibenzofuran	132-64-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Nitroaniline	100-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Carbazole	86-74-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 3,3`-Dichlorobenzidine	91-94-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1924021-032	BH404 / 0.5E	EP075: Aniline	62-53-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Chloroaniline	106-47-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Nitroaniline	88-74-4	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: 3-Nitroaniline	99-09-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: Dibenzofuran	132-64-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Nitroaniline	100-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Carbazole	86-74-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 3,3`-Dichlorobenzidine	91-94-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 2503656)									
ES1924021-001	BH301 / 0.15E	EP075: alpha-BHC	319-84-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: beta-BHC	319-85-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: gamma-BHC	58-89-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: delta-BHC	319-86-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Heptachlor	76-44-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Aldrin	309-00-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Heptachlor epoxide	1024-57-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: alpha-Endosulfan	959-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4,4`-DDE	72-55-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Dieldrin	60-57-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Endrin	72-20-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: beta-Endosulfan	33213-65-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

(Preliminary Report)

Page : 11 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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 (%)
EP075I: Organochlorine Pesticides (QC Lot: 2503656) - continued									
ES1924021-001	BH301 / 0.15E	EP075: 4,4`-DDD	72-54-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Endosulfan sulfate	1031-07-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4,4`-DDT	50-29-3	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
ES1924021-032	BH404 / 0.5E	EP075: alpha-BHC	319-84-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: beta-BHC	319-85-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: gamma-BHC	58-89-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: delta-BHC	319-86-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Heptachlor	76-44-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Aldrin	309-00-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Heptachlor epoxide	1024-57-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: alpha-Endosulfan	959-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4,4`-DDE	72-55-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Dieldrin	60-57-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Endrin	72-20-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: beta-Endosulfan	33213-65-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4,4`-DDD	72-54-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Endosulfan sulfate	1031-07-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4,4`-DDT	50-29-3	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
EP075J: Organophosphorus Pesticides (QC Lot: 2503656)									
ES1924021-001	BH301 / 0.15E	EP075: Dichlorvos	62-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Dimethoate	60-51-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Diazinon	333-41-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Malathion	121-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Fenthion	55-38-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Chlorpyrifos	2921-88-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pirimphos-ethyl	23505-41-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Chlorfenvinphos	470-90-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Prothiofos	34643-46-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Ethion	563-12-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		ES1924021-032	BH404 / 0.5E	EP075: Dichlorvos	62-73-7	0.5	mg/kg	<0.5	<0.5
EP075: Dimethoate	60-51-5			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075: Diazinon	333-41-5			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075: Chlorpyrifos-methyl	5598-13-0			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075: Malathion	121-75-5			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075: Fenthion	55-38-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075: Chlorpyrifos	2921-88-2			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075: Pirimphos-ethyl	23505-41-1			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075: Chlorfenvinphos	470-90-6			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075: Prothiofos	34643-46-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		

(Preliminary Report)

Page : 12 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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 (%)
EP075J: Organophosphorus Pesticides (QC Lot: 2503656) - continued									
ES1924021-032	BH404 / 0.5E	EP075: Ethion	563-12-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2503657)									
ES1924021-001	BH301 / 0.15E	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
ES1924021-032	BH404 / 0.5E	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: 2503951)									
ES1924021-001	BH301 / 0.15E	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1924021-024	BH309 / 0.4E	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2503657)									
ES1924021-001	BH301 / 0.15E	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
ES1924021-032	BH404 / 0.5E	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: 2503951)									
ES1924021-001	BH301 / 0.15E	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1924021-024	BH309 / 0.4E	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 2503951)									
ES1924021-001	BH301 / 0.15E	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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1924021-024	BH309 / 0.4E	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
		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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		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: 2504604)									
ES1924021-012	BH305 / 0.4E	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

(Preliminary Report)

Page : 13 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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 (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2504604) - continued									
ES1924021-012	BH305 / 0.4E	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)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
ES1924360-006	Anonymous	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	0.0004	0.0004	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	0.0015	0.0012	19.9	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2504604)							
ES1924021-012	BH305 / 0.4E	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
		ES1924360-006	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002
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: 2504604)									
ES1924021-012	BH305 / 0.4E	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

Sub-Matrix: SOIL

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 (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2504604) - continued									
ES1924021-012	BH305 / 0.4E	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)	24448-09-7	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
ES1924360-006	Anonymous	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)	24448-09-7	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: 2504604)									
ES1924021-012	BH305 / 0.4E	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
ES1924360-006	Anonymous	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: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)C: Leachable Metals by ICPAES (QC Lot: 2509309)									

(Preliminary Report)

Page : 15 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Sub-Matrix: **WATER**

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 (%)
EG005(ED093)C: Leachable Metals by ICPAES (QC Lot: 2509309) - continued									
ES1917798-014	Anonymous	EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Copper	7440-50-8	0.1	mg/L	2.0	2.1	0.00	0% - 20%
		EG005C: Lead	7439-92-1	0.1	mg/L	2.5	2.6	0.00	0% - 20%
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Zinc	7440-66-6	0.1	mg/L	0.2	0.2	0.00	No Limit
ES1924275-003	Anonymous	EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Zinc	7440-66-6	0.1	mg/L	0.1	0.1	0.00	No Limit
EG035C: Leachable Mercury by FIMS (QC Lot: 2508869)									
ES1924021-001	BH301 / 0.15E	EG035C: Mercury	7439-97-6	0.0001	mg/L	<0.0010	<0.0010	0.00	No Limit

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2504267)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	108	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	105	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	93.3	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	110	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	103	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	103	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	104	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2504266)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	82.7	70	105
EN33: TCLP Leach (QCLot: 2506576)								
EN33a: Initial pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: After HCl pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: Final pH	----	0.1	pH Unit	1.0	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2503659)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	108	62	126
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2503952)								
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	77.4	67	113
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	96.0	65	117
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	85.8	66	122
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	92.0	68	118
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	93.7	69	119
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	91.8	69	117
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	90.4	69	115
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	93.1	66	118
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	89.0	59	125
EP074B: Oxygenated Compounds (QCLot: 2503952)								
EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	10 mg/kg	69.4	30	156
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	92.9	58	136
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	10 mg/kg	87.5	62	132
EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	10 mg/kg	85.8	54	136
EP074C: Sulfonated Compounds (QCLot: 2503952)								
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	73.9	54	126
EP074D: Fumigants (QCLot: 2503952)								

(Preliminary Report)

Page : 17 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Sub-Matrix: SOIL

Method Blank (MB) Report				Laboratory Control Spike (LCS) Report				
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
					LCS		Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EP074D: Fumigants (QCLot: 2503952) - continued								
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	80.9	60	126
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	88.5	68	124
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	73.7	51	119
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	73.6	52	114
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	98.7	63	115
EP074E: Halogenated Aliphatic Compounds (QCLot: 2503952)								
EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	10 mg/kg	92.6	30	148
EP074: Chloromethane	74-87-3	5	mg/kg	<5	10 mg/kg	79.1	41	141
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	99.7	43	147
EP074: Bromomethane	74-83-9	5	mg/kg	<5	10 mg/kg	101	47	141
EP074: Chloroethane	75-00-3	5	mg/kg	<5	10 mg/kg	103	49	143
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	10 mg/kg	103	49	135
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	90.4	54	126
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	75.9	43	129
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	80.9	64	120
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	89.3	67	125
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	90.2	69	121
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	81.6	65	117
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	84.0	65	123
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	77.6	59	125
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	88.9	65	125
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	89.8	70	118
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	92.5	68	118
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	105	64	126
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	102	68	122
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	105	67	143
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	94.6	62	122
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	86.7	54	128
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	82.9	55	129
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	98.6	65	121
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	100	61	125
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	88.3	20	134
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	86.3	53	129
EP074F: Halogenated Aromatic Compounds (QCLot: 2503952)								
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	102	68	116
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	95.2	70	114
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	89.7	68	122
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	88.7	67	123
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	103	52	122

(Preliminary Report)

Page : 18 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EP074G: Trihalomethanes (QCLot: 2503952)								
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	87.5	66	124
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	79.3	61	121
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	89.8	63	121
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	87.5	60	126
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2503658)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	107	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	105	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	107	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	104	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	107	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	93.4	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	112	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	109	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	92.8	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	98.9	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	88.5	68	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	98.6	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	99.1	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	96.0	61	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	92.7	62	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	92.1	63	121
EP075A: Phenolic Compounds (QCLot: 2503656)								
EP075: Phenol	108-95-2	0.5	mg/kg	<0.5	1.5 mg/kg	104	64	114
EP075: 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	1.5 mg/kg	91.6	57	115
EP075: 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	1.5 mg/kg	87.7	55	117
EP075: 3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5	1.5 mg/kg	76.6	46	122
EP075: 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	1.5 mg/kg	80.9	47	117
EP075: 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	1.5 mg/kg	88.2	14	108
EP075: 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	1.5 mg/kg	86.0	47	105
EP075: 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	1.5 mg/kg	94.4	48	110
EP075: 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	1.5 mg/kg	99.4	57	113
EP075: 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	1.5 mg/kg	90.8	49	109
EP075: 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	1.5 mg/kg	91.0	49	107
EP075: Pentachlorophenol	87-86-5	1	mg/kg	<1	3 mg/kg	23.4	12	76
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2503656)								
EP075: 2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5	1.5 mg/kg	102	58	116
EP075: N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5	1.5 mg/kg	90.1	58	114

(Preliminary Report)

Page : 19 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2503656) - continued								
EP075: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5	1.5 mg/kg	100	48	106
EP075: 3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5	1.5 mg/kg	87.8	50	116
EP075C: Phthalate Esters (QCLot: 2503656)								
EP075: Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5	1.5 mg/kg	111	60	118
EP075: Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5	1.5 mg/kg	88.4	65	115
EP075: Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5	1.5 mg/kg	87.4	65	121
EP075: Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5	1.5 mg/kg	90.5	62	116
EP075: bis(2-ethylhexyl) phthalate	117-81-7	----	mg/kg	----	1.5 mg/kg	82.5	69	133
EP075: Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5	1.5 mg/kg	81.9	62	124
EP075D: Nitrosamines (QCLot: 2503656)								
EP075: N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5	1.5 mg/kg	63.6	39	124
EP075: N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5	1.5 mg/kg	82.2	59	117
EP075: N-Nitrosopyrrolidine	930-55-2	0.5	mg/kg	<0.5	1.5 mg/kg	78.9	53	125
EP075: N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5	1.5 mg/kg	85.9	65	121
EP075: N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5	1.5 mg/kg	81.1	59	123
EP075: N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5	1.5 mg/kg	75.4	57	115
EP075: N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5	1.5 mg/kg	94.2	57	119
EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	0.5	mg/kg	<0.6	3 mg/kg	94.2	42	112
EP075: Methapyrilene	91-80-5	0.5	mg/kg	<0.5	1.5 mg/kg	62.4	16	123
EP075E: Nitroaromatics and Ketones (QCLot: 2503656)								
EP075: 2-Picoline	109-06-8	0.5	mg/kg	<0.5	1.5 mg/kg	51.6	27	129
EP075: Acetophenone	98-86-2	0.5	mg/kg	<0.5	1.5 mg/kg	80.7	60	116
EP075: Nitrobenzene	98-95-3	0.5	mg/kg	<0.5	1.5 mg/kg	99.4	65	119
EP075: Isophorone	78-59-1	0.5	mg/kg	<0.5	1.5 mg/kg	84.1	62	116
EP075: 2,6-Dinitrotoluene	606-20-2	0.5	mg/kg	<0.5	1.5 mg/kg	107	58	118
EP075: 2,4-Dinitrotoluene	121-14-2	0.5	mg/kg	<0.5	1.5 mg/kg	98.1	59	115
EP075: 1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5	1.5 mg/kg	53.8	18	112
EP075: 4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5	1.5 mg/kg	74.5	10	87
EP075: 5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5	1.5 mg/kg	77.4	48	99
EP075: Azobenzene	103-33-3	1	mg/kg	<1	1.5 mg/kg	85.6	62	118
EP075: 1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5	1.5 mg/kg	79.3	36	114
EP075: Phenacetin	62-44-2	0.5	mg/kg	<0.5	1.5 mg/kg	95.7	62	114
EP075: 4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5	1.5 mg/kg	56.2	36	102
EP075: Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5	1.5 mg/kg	97.8	56	110
EP075: Pronamide	23950-58-5	0.5	mg/kg	<0.5	1.5 mg/kg	96.8	54	110
EP075: Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5	1.5 mg/kg	93.7	48	108
EP075: Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5	1.5 mg/kg	101	57	112

(Preliminary Report)

Page : 20 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EP075F: Haloethers (QCLot: 2503656)								
EP075: Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	<0.5	1.5 mg/kg	92.7	63	121
EP075: Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	<0.5	1.5 mg/kg	83.0	59	115
EP075: 4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	<0.5	1.5 mg/kg	98.7	58	112
EP075: 4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	108	58	110
EP075G: Chlorinated Hydrocarbons (QCLot: 2503656)								
EP075: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1.5 mg/kg	92.0	58	112
EP075: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1.5 mg/kg	88.3	58	116
EP075: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1.5 mg/kg	96.6	57	115
EP075: Hexachloroethane	67-72-1	0.5	mg/kg	<0.5	1.5 mg/kg	93.4	54	116
EP075: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1.5 mg/kg	104	63	108
EP075: Hexachloropropylene	1888-71-7	0.5	mg/kg	<0.5	1.5 mg/kg	# 114	39	110
EP075: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1.5 mg/kg	# 118	59	117
EP075: Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	<2.5	1.5 mg/kg	60.6	24	108
EP075: Pentachlorobenzene	608-93-5	0.5	mg/kg	<0.5	1.5 mg/kg	107	57	109
EP075: Hexachlorobenzene (HCB)	118-74-1	0.5	mg/kg	<0.5	1.5 mg/kg	111	59	111
EP075H: Anilines and Benzidines (QCLot: 2503656)								
EP075: Aniline	62-53-3	0.5	mg/kg	<0.5	1.5 mg/kg	84.2	13	108
EP075: 4-Chloroaniline	106-47-8	0.5	mg/kg	<0.5	1.5 mg/kg	59.6	21	99
EP075: 2-Nitroaniline	88-74-4	0.5	mg/kg	<0.5	1.5 mg/kg	99.7	52	112
EP075: 3-Nitroaniline	99-09-2	0.5	mg/kg	<0.5	1.5 mg/kg	68.3	32	94
EP075: Dibenzofuran	132-64-9	0.5	mg/kg	<0.5	1.5 mg/kg	101	60	110
EP075: 4-Nitroaniline	100-01-6	0.5	mg/kg	<0.5	1.5 mg/kg	86.0	42	112
EP075: Carbazole	86-74-8	0.5	mg/kg	<0.5	1.5 mg/kg	87.9	59	111
EP075: 3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg	<0.5	1.5 mg/kg	75.6	23	113
EP075I: Organochlorine Pesticides (QCLot: 2503656)								
EP075: alpha-BHC	319-84-6	0.5	mg/kg	<0.5	1.5 mg/kg	103	63	113
EP075: beta-BHC	319-85-7	0.5	mg/kg	<0.5	1.5 mg/kg	79.2	57	113
EP075: gamma-BHC	58-89-9	0.5	mg/kg	<0.5	1.5 mg/kg	104	61	117
EP075: delta-BHC	319-86-8	0.5	mg/kg	<0.5	1.5 mg/kg	94.5	64	118
EP075: Heptachlor	76-44-8	0.5	mg/kg	<0.5	1.5 mg/kg	102	55	115
EP075: Aldrin	309-00-2	0.5	mg/kg	<0.5	1.5 mg/kg	95.5	61	115
EP075: Heptachlor epoxide	1024-57-3	0.5	mg/kg	<0.5	1.5 mg/kg	112	56	118
EP075: alpha-Endosulfan	959-98-8	0.5	mg/kg	<0.5	1.5 mg/kg	106	65	125
EP075: 4,4'-DDE	72-55-9	0.5	mg/kg	<0.5	1.5 mg/kg	97.8	60	116
EP075: Dieldrin	60-57-1	0.5	mg/kg	<0.5	1.5 mg/kg	105	64	118
EP075: Endrin	72-20-8	0.5	mg/kg	<0.5	1.5 mg/kg	101	53	117
EP075: beta-Endosulfan	33213-65-9	0.5	mg/kg	<0.5	1.5 mg/kg	108	65	115
EP075: 4,4'-DDD	72-54-8	0.5	mg/kg	<0.5	1.5 mg/kg	111	62	118

(Preliminary Report)

Page : 21 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Sub-Matrix: SOIL

Method Blank (MB) Report				Laboratory Control Spike (LCS) Report				
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)		
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EP075I: Organochlorine Pesticides (QCLot: 2503656) - continued								
EP075: Endosulfan sulfate	1031-07-8	0.5	mg/kg	<0.5	1.5 mg/kg	102	63	129
EP075: 4,4'-DDT	50-29-3	0.5	mg/kg	<0.5	1.5 mg/kg	104	46	122
EP075J: Organophosphorus Pesticides (QCLot: 2503656)								
EP075: Dichlorvos	62-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	66.5	46	112
EP075: Dimethoate	60-51-5	0.5	mg/kg	<0.5	1.5 mg/kg	104	63	119
EP075: Diazinon	333-41-5	0.5	mg/kg	<0.5	1.5 mg/kg	94.3	68	134
EP075: Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	<0.5	1.5 mg/kg	108	60	130
EP075: Malathion	121-75-5	0.5	mg/kg	<0.5	1.5 mg/kg	100	65	127
EP075: Fenthion	55-38-9	0.5	mg/kg	<0.5	1.5 mg/kg	97.1	60	116
EP075: Chlorpyrifos	2921-88-2	0.5	mg/kg	<0.5	1.5 mg/kg	82.3	63	113
EP075: Pirimphos-ethyl	23505-41-1	0.5	mg/kg	<0.5	1.5 mg/kg	88.7	65	115
EP075: Chlorfenvinphos	470-90-6	0.5	mg/kg	<0.5	1.5 mg/kg	93.7	59	103
EP075: Prothiofos	34643-46-4	0.5	mg/kg	<0.5	1.5 mg/kg	94.3	59	119
EP075: Ethion	563-12-2	0.5	mg/kg	<0.5	1.5 mg/kg	115	62	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2503657)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	90.4	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	105	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	86.5	71	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2503951)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	81.6	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2503657)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	100.0	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	104	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	79.0	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2503951)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	83.3	68	128
EP080: BTEXN (QCLot: 2503951)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	84.4	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	89.3	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	88.0	65	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	91.7	66	118
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	89.3	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	90.6	63	119
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2504604)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	62.0	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	66.8	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	64.4	52	126

(Preliminary Report)

Page : 22 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2504604) - continued								
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.2	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2504604)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	57.2	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	62.0	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	71.2	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.2	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	69.6	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.0	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	74.2	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2504604)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.4	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.6	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	66.0	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.0	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	66.2	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.0	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2504604)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	70.8	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	67.2	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	106	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	75.6	60	130
Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2509309)								
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	0.1 mg/L	105	80	124
EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	0.1 mg/L	99.4	80	118

(Preliminary Report)

Page : 23 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2509309) - continued								
EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	0.1 mg/L	99.1	88	114
EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	0.1 mg/L	99.5	86	114
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	0.1 mg/L	97.8	80	118
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	0.1 mg/L	99.6	83	115
EG005C: Zinc	7440-66-6	0.1	mg/L	<0.1	0.1 mg/L	102	79	123
EG035C: Leachable Mercury by FIMS (QCLot: 2508869)								
EG035C: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	100	79	109
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2508863)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	75.2	50	94
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	87.4	64	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	89.0	62	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	86.9	64	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	102	63	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	96.2	64	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	98.8	64	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	95.2	63	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	88.4	64	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	93.9	63	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	88.5	62	119
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	92.5	63	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	93.9	63	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	97.1	60	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	94.7	61	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	91.0	59	118

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**

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
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2504267)							
ES1923655-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	94.3	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	104	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	95.2	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	110	70	130

Page : 24 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2504267) - continued							
ES1923655-002	Anonymous	EG005T: Lead	7439-92-1	250 mg/kg	95.6	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	98.6	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	100	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2504266)							
ES1923655-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	111	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2503659)							
ES1924021-001	BH301 / 0.15E	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	103	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 2503952)							
ES1924021-001	BH301 / 0.15E	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	95.9	70	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	83.4	70	130
EP074F: Halogenated Aromatic Compounds (QCLot: 2503952)							
ES1924021-001	BH301 / 0.15E	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	101	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2503658)							
ES1924021-001	BH301 / 0.15E	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	109	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	114	70	130
EP075A: Phenolic Compounds (QCLot: 2503656)							
ES1924021-001	BH301 / 0.15E	EP075: Phenol	108-95-2	10 mg/kg	91.5	60	130
		EP075: 2-Chlorophenol	95-57-8	10 mg/kg	94.3	60	130
		EP075: 2-Nitrophenol	88-75-5	10 mg/kg	102	50	130
		EP075: 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	109	50	130
		EP075: Pentachlorophenol	87-86-5	10 mg/kg	46.8	10	130
EP075D: Nitrosamines (QCLot: 2503656)							
ES1924021-001	BH301 / 0.15E	EP075: N-Nitrosodi-n-propylamine	621-64-7	10 mg/kg	98.9	50	130
EP075E: Nitroaromatics and Ketones (QCLot: 2503656)							
ES1924021-001	BH301 / 0.15E	EP075: 2,4-Dinitrotoluene	121-14-2	10 mg/kg	101	40	130
EP075G: Chlorinated Hydrocarbons (QCLot: 2503656)							
ES1924021-001	BH301 / 0.15E	EP075: 1,4-Dichlorobenzene	106-46-7	10 mg/kg	105	60	130
		EP075: 1,2,4-Trichlorobenzene	120-82-1	10 mg/kg	106	50	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2503657)							
ES1924021-001	BH301 / 0.15E	EP071: C10 - C14 Fraction	----	523 mg/kg	99.2	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	110	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	113	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2503951)							
ES1924021-001	BH301 / 0.15E	EP080: C6 - C9 Fraction	----	32.5 mg/kg	89.1	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2503657)							

(Preliminary Report)

Page : 25 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2503657) - continued							
ES1924021-001	BH301 / 0.15E	EP071: >C10 - C16 Fraction	----	860 mg/kg	105	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	114	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	105	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2503951)							
ES1924021-001	BH301 / 0.15E	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	88.3	70	130
EP080: BTEXN (QCLot: 2503951)							
ES1924021-001	BH301 / 0.15E	EP080: Benzene	71-43-2	2.5 mg/kg	87.1	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	92.2	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	93.7	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	94.8	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	95.0	70	130
	EP080: Naphthalene	91-20-3	2.5 mg/kg	83.3	70	130	
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2504604)							
ES1924021-012	BH305 / 0.4E	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	77.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	82.8	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	76.0	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	88.4	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	74.0	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	74.4	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2504604)							
ES1924021-012	BH305 / 0.4E	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	68.0	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	66.8	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	87.6	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	80.8	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	85.6	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	70.4	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	74.8	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	85.6	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	90.8	50	130
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.00125 mg/kg	75.6	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	75.5	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2504604)							
ES1924021-012	BH305 / 0.4E	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	74.4	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	61.4	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	72.6	30	130

(Preliminary Report)

Page : 26 of 26
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2504604) - continued							
ES1924021-012	BH305 / 0.4E	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	94.9	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	65.9	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	102	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	86.8	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2504604)							
ES1924021-012	BH305 / 0.4E	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	76.0	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	74.4	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	69.6	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	83.6	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
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2509309)							
ES1922293-004	Anonymous	EG005C: Arsenic	7440-38-2	1 mg/L	97.6	70	130
		EG005C: Cadmium	7440-43-9	0.25 mg/L	97.5	70	130
		EG005C: Chromium	7440-47-3	1 mg/L	97.2	70	130
		EG005C: Copper	7440-50-8	1 mg/L	94.5	70	130
		EG005C: Lead	7439-92-1	1 mg/L	98.7	70	130
		EG005C: Nickel	7440-02-0	1 mg/L	97.7	70	130
		EG005C: Zinc	7440-66-6	1 mg/L	102	70	130
EG035C: Leachable Mercury by FIMS (QCLot: 2508869)							
ES1924021-011	BH305 / 0.4E	EG035C: Mercury	7439-97-6	0.01 mg/L	93.7	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES1924021	Page	: 1 of 35
Amendment	: (Preliminary Report)		
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Sydney
Contact	: ERIC WON	Telephone	: +61-2-8784 8555
Project	: 19125312	Date Samples Received	: 31-Jul-2019
Site	: ----	Issue Date	: 07-Aug-2019
Sampler	: ----	No. of samples received	: 33
Order number	: 19125312	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 Matrix Spike** outliers occur.
- Laboratory Control outliers exist - please see following pages for full details.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

(Preliminary Report)

Page : 2 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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							
EP075G: Chlorinated Hydrocarbons	QC-2503656-002	----	Hexachloropropylene	1888-71-7	114 %	39-110%	Recovery greater than upper control limit
EP075G: Chlorinated Hydrocarbons	QC-2503656-002	----	Hexachlorobutadiene	87-68-3	118 %	59-117%	Recovery greater than upper control limit

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075T: Base/Neutral Extractable Surrogates	ES1924021-001	BH301 / 0.15E	2-Fluorobiphenyl	321-60-8	124 %	35-121 %	Recovery greater than upper data quality objective
EP075T: Base/Neutral Extractable Surrogates	ES1924021-004	BH303 / 0.2E	2-Fluorobiphenyl	321-60-8	125 %	35-121 %	Recovery greater than upper data quality objective
EP075T: Base/Neutral Extractable Surrogates	ES1924021-020	BH307 / 0.5E	2-Fluorobiphenyl	321-60-8	125 %	35-121 %	Recovery greater than upper data quality objective
EP075T: Base/Neutral Extractable Surrogates	ES1924021-024	BH309 / 0.4E	2-Fluorobiphenyl	321-60-8	122 %	35-121 %	Recovery greater than upper data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar BH306 / 0.5E,	BH306 / 1.5E	----	----	----	05-Aug-2019	23-Jul-2019	13
HDPE Soil Jar BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	----	----	----	05-Aug-2019	24-Jul-2019	12
HDPE Soil Jar BH304 / 0.7E		----	----	----	05-Aug-2019	25-Jul-2019	11
HDPE Soil Jar BH307 / 0.5E		----	----	----	05-Aug-2019	01-Aug-2019	4
HDPE Soil Jar BH305 / 0.4E		----	----	----	05-Aug-2019	03-Aug-2019	2
Soil Glass Jar - Unpreserved BH306 / 0.5E,	BH306 / 1.5E	----	----	----	02-Aug-2019	23-Jul-2019	10
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	----	----	----	02-Aug-2019	24-Jul-2019	9

(Preliminary Report)

Page : 3 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EA055: Moisture Content (Dried @ 105-110°C) - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved BH304 / 0.7E	----	----	----	02-Aug-2019	25-Jul-2019	8
Soil Glass Jar - Unpreserved BH303 / 0.2E	----	----	----	02-Aug-2019	29-Jul-2019	4
Soil Glass Jar - Unpreserved BH307 / 0.5E	----	----	----	02-Aug-2019	01-Aug-2019	1
EN33: TCLP Leach						
Non-Volatile Leach: 14 day HT(e.g. SV organics) BH307 / 0.5E	05-Aug-2019	01-Aug-2019	4	----	----	----
Non-Volatile Leach: 14 day HT(e.g. SV organics) BH305 / 0.4E	05-Aug-2019	03-Aug-2019	2	----	----	----
EP066: Polychlorinated Biphenyls (PCB)						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.1E, BH404 / 0.5E	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	02-Aug-2019	16-Jul-2019	17	02-Aug-2019	16-Jul-2019	17
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.1E, BH404 / 0.5E	02-Aug-2019	17-Jul-2019	16	02-Aug-2019	17-Jul-2019	16
Soil Glass Jar - Unpreserved BH304 / 0.7E	02-Aug-2019	18-Jul-2019	15	02-Aug-2019	18-Jul-2019	15
Soil Glass Jar - Unpreserved BH303 / 0.2E	02-Aug-2019	22-Jul-2019	11	02-Aug-2019	22-Jul-2019	11
Soil Glass Jar - Unpreserved BH307 / 0.5E	02-Aug-2019	25-Jul-2019	8	02-Aug-2019	25-Jul-2019	8
Soil Glass Jar - Unpreserved BH305 / 0.4E	02-Aug-2019	27-Jul-2019	6	02-Aug-2019	27-Jul-2019	6
Soil Glass Jar - Unpreserved BH309 / 0.4E	02-Aug-2019	30-Jul-2019	3	02-Aug-2019	30-Jul-2019	3

(Preliminary Report)

Page : 4 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP074A: Monocyclic Aromatic Hydrocarbons - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved BH301 / 0.15E	02-Aug-2019	31-Jul-2019	2	02-Aug-2019	31-Jul-2019	2
EP074B: Oxygenated Compounds						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	02-Aug-2019	16-Jul-2019	17	02-Aug-2019	16-Jul-2019	17
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E, BH404 / 0.1E,	02-Aug-2019	17-Jul-2019	16	02-Aug-2019	17-Jul-2019	16
Soil Glass Jar - Unpreserved BH304 / 0.7E	02-Aug-2019	18-Jul-2019	15	02-Aug-2019	18-Jul-2019	15
Soil Glass Jar - Unpreserved BH303 / 0.2E	02-Aug-2019	22-Jul-2019	11	02-Aug-2019	22-Jul-2019	11
Soil Glass Jar - Unpreserved BH307 / 0.5E	02-Aug-2019	25-Jul-2019	8	02-Aug-2019	25-Jul-2019	8
Soil Glass Jar - Unpreserved BH305 / 0.4E	02-Aug-2019	27-Jul-2019	6	02-Aug-2019	27-Jul-2019	6
Soil Glass Jar - Unpreserved BH309 / 0.4E	02-Aug-2019	30-Jul-2019	3	02-Aug-2019	30-Jul-2019	3
Soil Glass Jar - Unpreserved BH301 / 0.15E	02-Aug-2019	31-Jul-2019	2	02-Aug-2019	31-Jul-2019	2
EP074C: Sulfonated Compounds						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	02-Aug-2019	16-Jul-2019	17	02-Aug-2019	16-Jul-2019	17
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E, BH404 / 0.1E,	02-Aug-2019	17-Jul-2019	16	02-Aug-2019	17-Jul-2019	16
Soil Glass Jar - Unpreserved BH304 / 0.7E	02-Aug-2019	18-Jul-2019	15	02-Aug-2019	18-Jul-2019	15
Soil Glass Jar - Unpreserved BH303 / 0.2E	02-Aug-2019	22-Jul-2019	11	02-Aug-2019	22-Jul-2019	11
Soil Glass Jar - Unpreserved BH307 / 0.5E	02-Aug-2019	25-Jul-2019	8	02-Aug-2019	25-Jul-2019	8
Soil Glass Jar - Unpreserved BH305 / 0.4E	02-Aug-2019	27-Jul-2019	6	02-Aug-2019	27-Jul-2019	6
Soil Glass Jar - Unpreserved BH309 / 0.4E	02-Aug-2019	30-Jul-2019	3	02-Aug-2019	30-Jul-2019	3
Soil Glass Jar - Unpreserved BH301 / 0.15E	02-Aug-2019	31-Jul-2019	2	02-Aug-2019	31-Jul-2019	2
EP074D: Fumigants						

(Preliminary Report)

Page : 5 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP074D: Fumigants - Analysis Holding Time Compliance							
Soil Glass Jar - Unpreserved BH306 / 0.5E,	BH306 / 1.5E	02-Aug-2019	16-Jul-2019	17	02-Aug-2019	16-Jul-2019	17
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	02-Aug-2019	17-Jul-2019	16	02-Aug-2019	17-Jul-2019	16
Soil Glass Jar - Unpreserved BH304 / 0.7E		02-Aug-2019	18-Jul-2019	15	02-Aug-2019	18-Jul-2019	15
Soil Glass Jar - Unpreserved BH303 / 0.2E		02-Aug-2019	22-Jul-2019	11	02-Aug-2019	22-Jul-2019	11
Soil Glass Jar - Unpreserved BH307 / 0.5E		02-Aug-2019	25-Jul-2019	8	02-Aug-2019	25-Jul-2019	8
Soil Glass Jar - Unpreserved BH305 / 0.4E		02-Aug-2019	27-Jul-2019	6	02-Aug-2019	27-Jul-2019	6
Soil Glass Jar - Unpreserved BH309 / 0.4E		02-Aug-2019	30-Jul-2019	3	02-Aug-2019	30-Jul-2019	3
Soil Glass Jar - Unpreserved BH301 / 0.15E		02-Aug-2019	31-Jul-2019	2	02-Aug-2019	31-Jul-2019	2
EP074E: Halogenated Aliphatic Compounds							
Soil Glass Jar - Unpreserved BH306 / 0.5E,	BH306 / 1.5E	02-Aug-2019	16-Jul-2019	17	02-Aug-2019	16-Jul-2019	17
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	02-Aug-2019	17-Jul-2019	16	02-Aug-2019	17-Jul-2019	16
Soil Glass Jar - Unpreserved BH304 / 0.7E		02-Aug-2019	18-Jul-2019	15	02-Aug-2019	18-Jul-2019	15
Soil Glass Jar - Unpreserved BH303 / 0.2E		02-Aug-2019	22-Jul-2019	11	02-Aug-2019	22-Jul-2019	11
Soil Glass Jar - Unpreserved BH307 / 0.5E		02-Aug-2019	25-Jul-2019	8	02-Aug-2019	25-Jul-2019	8
Soil Glass Jar - Unpreserved BH305 / 0.4E		02-Aug-2019	27-Jul-2019	6	02-Aug-2019	27-Jul-2019	6
Soil Glass Jar - Unpreserved BH309 / 0.4E		02-Aug-2019	30-Jul-2019	3	02-Aug-2019	30-Jul-2019	3
Soil Glass Jar - Unpreserved BH301 / 0.15E		02-Aug-2019	31-Jul-2019	2	02-Aug-2019	31-Jul-2019	2
EP074F: Halogenated Aromatic Compounds							
Soil Glass Jar - Unpreserved BH306 / 0.5E,	BH306 / 1.5E	02-Aug-2019	16-Jul-2019	17	02-Aug-2019	16-Jul-2019	17
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	02-Aug-2019	17-Jul-2019	16	02-Aug-2019	17-Jul-2019	16

(Preliminary Report)

Page : 6 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP074F: Halogenated Aromatic Compounds - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved BH304 / 0.7E	02-Aug-2019	18-Jul-2019	15	02-Aug-2019	18-Jul-2019	15
Soil Glass Jar - Unpreserved BH303 / 0.2E	02-Aug-2019	22-Jul-2019	11	02-Aug-2019	22-Jul-2019	11
Soil Glass Jar - Unpreserved BH307 / 0.5E	02-Aug-2019	25-Jul-2019	8	02-Aug-2019	25-Jul-2019	8
Soil Glass Jar - Unpreserved BH305 / 0.4E	02-Aug-2019	27-Jul-2019	6	02-Aug-2019	27-Jul-2019	6
Soil Glass Jar - Unpreserved BH309 / 0.4E	02-Aug-2019	30-Jul-2019	3	02-Aug-2019	30-Jul-2019	3
Soil Glass Jar - Unpreserved BH301 / 0.15E	02-Aug-2019	31-Jul-2019	2	02-Aug-2019	31-Jul-2019	2
EP074G: Trihalomethanes						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	02-Aug-2019	16-Jul-2019	17	02-Aug-2019	16-Jul-2019	17
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E, BH404 / 0.1E,	02-Aug-2019	17-Jul-2019	16	02-Aug-2019	17-Jul-2019	16
Soil Glass Jar - Unpreserved BH304 / 0.7E	02-Aug-2019	18-Jul-2019	15	02-Aug-2019	18-Jul-2019	15
Soil Glass Jar - Unpreserved BH303 / 0.2E	02-Aug-2019	22-Jul-2019	11	02-Aug-2019	22-Jul-2019	11
Soil Glass Jar - Unpreserved BH307 / 0.5E	02-Aug-2019	25-Jul-2019	8	02-Aug-2019	25-Jul-2019	8
Soil Glass Jar - Unpreserved BH305 / 0.4E	02-Aug-2019	27-Jul-2019	6	02-Aug-2019	27-Jul-2019	6
Soil Glass Jar - Unpreserved BH309 / 0.4E	02-Aug-2019	30-Jul-2019	3	02-Aug-2019	30-Jul-2019	3
Soil Glass Jar - Unpreserved BH301 / 0.15E	02-Aug-2019	31-Jul-2019	2	02-Aug-2019	31-Jul-2019	2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E, BH404 / 0.1E,	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----

Matrix: SOIL

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP075A: Phenolic Compounds						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E, BH404 / 0.1E,	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E, BH404 / 0.1E,	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP075C: Phthalate Esters						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E, BH404 / 0.1E,	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP075D: Nitrosamines						

(Preliminary Report)

Page : 8 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP075D: Nitrosamines - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP075E: Nitroaromatics and Ketones						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP075F: Haloethers						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP075G: Chlorinated Hydrocarbons						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E	03-Aug-2019	24-Jul-2019	10	----	----	----

(Preliminary Report)

Page : 9 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP075G: Chlorinated Hydrocarbons - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP075H: Anilines and Benzidines						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E, BH404 / 0.1E,	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP075I: Organochlorine Pesticides						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E, BH404 / 0.1E,	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP075J: Organophosphorus Pesticides						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E, BH404 / 0.1E,	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----

(Preliminary Report)

Page : 10 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP075J: Organophosphorus Pesticides - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	02-Aug-2019	23-Jul-2019	10	02-Aug-2019	23-Jul-2019	10
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.1E, BH404 / 0.5E	02-Aug-2019	24-Jul-2019	9	02-Aug-2019	24-Jul-2019	9
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.1E, BH404 / 0.5E	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	02-Aug-2019	25-Jul-2019	8	02-Aug-2019	25-Jul-2019	8
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----
Soil Glass Jar - Unpreserved BH303 / 0.2E	02-Aug-2019	29-Jul-2019	4	02-Aug-2019	29-Jul-2019	4
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	02-Aug-2019	01-Aug-2019	1	02-Aug-2019	01-Aug-2019	1
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	02-Aug-2019	23-Jul-2019	10	02-Aug-2019	23-Jul-2019	10
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	03-Aug-2019	23-Jul-2019	11	----	----	----
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.1E, BH404 / 0.5E	02-Aug-2019	24-Jul-2019	9	02-Aug-2019	24-Jul-2019	9
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.1E, BH404 / 0.5E	03-Aug-2019	24-Jul-2019	10	----	----	----
Soil Glass Jar - Unpreserved BH304 / 0.7E	02-Aug-2019	25-Jul-2019	8	02-Aug-2019	25-Jul-2019	8
Soil Glass Jar - Unpreserved BH304 / 0.7E	03-Aug-2019	25-Jul-2019	9	----	----	----

(Preliminary Report)

Page : 11 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Analysis Holding Time						
Soil Glass Jar - Unpreserved BH303 / 0.2E	02-Aug-2019	29-Jul-2019	4	02-Aug-2019	29-Jul-2019	4
Soil Glass Jar - Unpreserved BH303 / 0.2E	03-Aug-2019	29-Jul-2019	5	----	----	----
Soil Glass Jar - Unpreserved BH307 / 0.5E	02-Aug-2019	01-Aug-2019	1	02-Aug-2019	01-Aug-2019	1
Soil Glass Jar - Unpreserved BH307 / 0.5E	03-Aug-2019	01-Aug-2019	2	----	----	----
EP080: BTEXN						
Soil Glass Jar - Unpreserved BH306 / 0.5E, BH306 / 1.5E	02-Aug-2019	23-Jul-2019	10	02-Aug-2019	23-Jul-2019	10
Soil Glass Jar - Unpreserved BH403 / 0.2E, BH404 / 0.5E, BH404 / 0.1E,	02-Aug-2019	24-Jul-2019	9	02-Aug-2019	24-Jul-2019	9
Soil Glass Jar - Unpreserved BH304 / 0.7E	02-Aug-2019	25-Jul-2019	8	02-Aug-2019	25-Jul-2019	8
Soil Glass Jar - Unpreserved BH303 / 0.2E	02-Aug-2019	29-Jul-2019	4	02-Aug-2019	29-Jul-2019	4
Soil Glass Jar - Unpreserved BH307 / 0.5E	02-Aug-2019	01-Aug-2019	1	02-Aug-2019	01-Aug-2019	1

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	12	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	12	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

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.

(Preliminary Report)

Page : 12 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-A: pH Measurements							
Snap Lock Bag - frozen on receipt at ALS (EA029) BH306 / 1.5E	09-Jul-2019	----	03-Apr-2022	----	Not Authorised	02-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH304 / 0.7E	11-Jul-2019	----	05-Apr-2022	----	Not Authorised	04-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH307 / 0.5E	18-Jul-2019	----	12-Apr-2022	----	Not Authorised	11-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH309 / 0.4E	23-Jul-2019	----	17-Apr-2022	----	Not Authorised	16-Jul-2022	----
EA029-B: Acidity Trail							
Snap Lock Bag - frozen on receipt at ALS (EA029) BH306 / 1.5E	09-Jul-2019	----	03-Apr-2022	----	Not Authorised	02-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH304 / 0.7E	11-Jul-2019	----	05-Apr-2022	----	Not Authorised	04-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH307 / 0.5E	18-Jul-2019	----	12-Apr-2022	----	Not Authorised	11-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH309 / 0.4E	23-Jul-2019	----	17-Apr-2022	----	Not Authorised	16-Jul-2022	----
EA029-C: Sulfur Trail							
Snap Lock Bag - frozen on receipt at ALS (EA029) BH306 / 1.5E	09-Jul-2019	----	03-Apr-2022	----	Not Authorised	02-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH304 / 0.7E	11-Jul-2019	----	05-Apr-2022	----	Not Authorised	04-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH307 / 0.5E	18-Jul-2019	----	12-Apr-2022	----	Not Authorised	11-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH309 / 0.4E	23-Jul-2019	----	17-Apr-2022	----	Not Authorised	16-Jul-2022	----
EA029-D: Calcium Values							
Snap Lock Bag - frozen on receipt at ALS (EA029) BH306 / 1.5E	09-Jul-2019	----	03-Apr-2022	----	Not Authorised	02-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH304 / 0.7E	11-Jul-2019	----	05-Apr-2022	----	Not Authorised	04-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH307 / 0.5E	18-Jul-2019	----	12-Apr-2022	----	Not Authorised	11-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH309 / 0.4E	23-Jul-2019	----	17-Apr-2022	----	Not Authorised	16-Jul-2022	----

(Preliminary Report)

Page : 13 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA029-E: Magnesium Values							
Snap Lock Bag - frozen on receipt at ALS (EA029) BH306 / 1.5E	09-Jul-2019	----	03-Apr-2022	----	Not Authorised	02-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH304 / 0.7E	11-Jul-2019	----	05-Apr-2022	----	Not Authorised	04-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH307 / 0.5E	18-Jul-2019	----	12-Apr-2022	----	Not Authorised	11-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH309 / 0.4E	23-Jul-2019	----	17-Apr-2022	----	Not Authorised	16-Jul-2022	----
EA029-F: Excess Acid Neutralising Capacity							
Snap Lock Bag - frozen on receipt at ALS (EA029) BH306 / 1.5E	09-Jul-2019	----	03-Apr-2022	----	Not Authorised	02-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH304 / 0.7E	11-Jul-2019	----	05-Apr-2022	----	Not Authorised	04-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH307 / 0.5E	18-Jul-2019	----	12-Apr-2022	----	Not Authorised	11-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH309 / 0.4E	23-Jul-2019	----	17-Apr-2022	----	Not Authorised	16-Jul-2022	----
EA029-G: Retained Acidity							
Snap Lock Bag - frozen on receipt at ALS (EA029) BH306 / 1.5E	09-Jul-2019	----	03-Apr-2022	----	Not Authorised	02-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH304 / 0.7E	11-Jul-2019	----	05-Apr-2022	----	Not Authorised	04-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH307 / 0.5E	18-Jul-2019	----	12-Apr-2022	----	Not Authorised	11-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH309 / 0.4E	23-Jul-2019	----	17-Apr-2022	----	Not Authorised	16-Jul-2022	----
EA029-H: Acid Base Accounting							
Snap Lock Bag - frozen on receipt at ALS (EA029) BH306 / 1.5E	09-Jul-2019	----	03-Apr-2022	----	Not Authorised	02-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH304 / 0.7E	11-Jul-2019	----	05-Apr-2022	----	Not Authorised	04-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH307 / 0.5E	18-Jul-2019	----	12-Apr-2022	----	Not Authorised	11-Jul-2022	----
Snap Lock Bag - frozen on receipt at ALS (EA029) BH309 / 0.4E	23-Jul-2019	----	17-Apr-2022	----	Not Authorised	16-Jul-2022	----

(Preliminary Report)

Page : 14 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen on receipt at ALS (EA037) BH306 / 1.5E		09-Jul-2019	07-Aug-2019	05-Jan-2020	✓	Not Authorised	05-Jan-2020	----
Snap Lock Bag - frozen on receipt at ALS (EA037) BH304 / 0.7E		11-Jul-2019	07-Aug-2019	07-Jan-2020	✓	Not Authorised	07-Jan-2020	----
Snap Lock Bag - frozen on receipt at ALS (EA037) BH307 / 0.5E		18-Jul-2019	07-Aug-2019	14-Jan-2020	✓	Not Authorised	14-Jan-2020	----
Snap Lock Bag - frozen on receipt at ALS (EA037) BH309 / 0.4E		23-Jul-2019	07-Aug-2019	19-Jan-2020	✓	Not Authorised	19-Jan-2020	----
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE Soil Jar (EA055) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	----	----	----	05-Aug-2019	23-Jul-2019	✗
HDPE Soil Jar (EA055) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	----	----	----	05-Aug-2019	24-Jul-2019	✗
HDPE Soil Jar (EA055) BH304 / 0.7E		11-Jul-2019	----	----	----	05-Aug-2019	25-Jul-2019	✗
HDPE Soil Jar (EA055) BH307 / 0.5E		18-Jul-2019	----	----	----	05-Aug-2019	01-Aug-2019	✗
HDPE Soil Jar (EA055) BH305 / 0.4E		20-Jul-2019	----	----	----	05-Aug-2019	03-Aug-2019	✗
HDPE Soil Jar (EA055) BH301 / 0.15E		24-Jul-2019	----	----	----	05-Aug-2019	07-Aug-2019	✓
Soil Glass Jar - Unpreserved (EA055) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	----	----	----	02-Aug-2019	23-Jul-2019	✗
Soil Glass Jar - Unpreserved (EA055) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	----	----	----	02-Aug-2019	24-Jul-2019	✗
Soil Glass Jar - Unpreserved (EA055) BH304 / 0.7E		11-Jul-2019	----	----	----	02-Aug-2019	25-Jul-2019	✗
Soil Glass Jar - Unpreserved (EA055) BH303 / 0.2E		15-Jul-2019	----	----	----	02-Aug-2019	29-Jul-2019	✗
Soil Glass Jar - Unpreserved (EA055) BH307 / 0.5E		18-Jul-2019	----	----	----	02-Aug-2019	01-Aug-2019	✗
Soil Glass Jar - Unpreserved (EA055) BH305 / 0.4E		20-Jul-2019	----	----	----	02-Aug-2019	03-Aug-2019	✓
Soil Glass Jar - Unpreserved (EA055) BH309 / 0.4E		23-Jul-2019	----	----	----	02-Aug-2019	06-Aug-2019	✓
Soil Glass Jar - Unpreserved (EA055) BH301 / 0.15E		24-Jul-2019	----	----	----	02-Aug-2019	07-Aug-2019	✓

(Preliminary Report)

Page : 15 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200) BH305 / 0.4E		20-Jul-2019	----	----	----	05-Aug-2019	16-Jan-2020	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) BH306 / 0.5E		09-Jul-2019	----	----	----	05-Aug-2019	05-Jan-2020	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	----	----	----	05-Aug-2019	06-Jan-2020	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) BH304 / 0.7E		11-Jul-2019	----	----	----	05-Aug-2019	07-Jan-2020	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) BH303 / 0.2E		15-Jul-2019	----	----	----	05-Aug-2019	11-Jan-2020	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) BH307 / 0.5E		18-Jul-2019	----	----	----	05-Aug-2019	14-Jan-2020	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) BH301 / 0.15E		24-Jul-2019	----	----	----	05-Aug-2019	20-Jan-2020	✓
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	05-Jan-2020	✓	05-Aug-2019	05-Jan-2020	✓
Soil Glass Jar - Unpreserved (EG005T) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	06-Jan-2020	✓	05-Aug-2019	06-Jan-2020	✓
Soil Glass Jar - Unpreserved (EG005T) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	07-Jan-2020	✓	05-Aug-2019	07-Jan-2020	✓
Soil Glass Jar - Unpreserved (EG005T) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	11-Jan-2020	✓	05-Aug-2019	11-Jan-2020	✓
Soil Glass Jar - Unpreserved (EG005T) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	14-Jan-2020	✓	05-Aug-2019	14-Jan-2020	✓
Soil Glass Jar - Unpreserved (EG005T) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	16-Jan-2020	✓	05-Aug-2019	16-Jan-2020	✓
Soil Glass Jar - Unpreserved (EG005T) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	19-Jan-2020	✓	05-Aug-2019	19-Jan-2020	✓
Soil Glass Jar - Unpreserved (EG005T) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	20-Jan-2020	✓	05-Aug-2019	20-Jan-2020	✓

(Preliminary Report)

Page : 16 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	06-Aug-2019	✓	05-Aug-2019	06-Aug-2019	✓
Soil Glass Jar - Unpreserved (EG035T) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	07-Aug-2019	✓	05-Aug-2019	07-Aug-2019	✓
Soil Glass Jar - Unpreserved (EG035T) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	08-Aug-2019	✓	05-Aug-2019	08-Aug-2019	✓
Soil Glass Jar - Unpreserved (EG035T) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	12-Aug-2019	✓	05-Aug-2019	12-Aug-2019	✓
Soil Glass Jar - Unpreserved (EG035T) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	15-Aug-2019	✓	05-Aug-2019	15-Aug-2019	✓
Soil Glass Jar - Unpreserved (EG035T) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	17-Aug-2019	✓	05-Aug-2019	17-Aug-2019	✓
Soil Glass Jar - Unpreserved (EG035T) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	20-Aug-2019	✓	05-Aug-2019	20-Aug-2019	✓
Soil Glass Jar - Unpreserved (EG035T) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	21-Aug-2019	✓	05-Aug-2019	21-Aug-2019	✓
EN33: TCLP Leach								
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN33a) BH307 / 0.5E		18-Jul-2019	05-Aug-2019	01-Aug-2019	✗	----	----	----
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN33a) BH305 / 0.4E		20-Jul-2019	05-Aug-2019	03-Aug-2019	✗	----	----	----
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN33a) BH301 / 0.15E		24-Jul-2019	05-Aug-2019	07-Aug-2019	✓	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✗	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP066) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✗	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP066) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✗	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP066) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✗	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP066) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✗	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP066) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP066) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP066) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓

(Preliminary Report)

Page : 17 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	16-Jul-2019	✖	02-Aug-2019	16-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	17-Jul-2019	✖	02-Aug-2019	17-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	18-Jul-2019	✖	02-Aug-2019	18-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	22-Jul-2019	✖	02-Aug-2019	22-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	25-Jul-2019	✖	02-Aug-2019	25-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	27-Jul-2019	✖	02-Aug-2019	27-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	30-Jul-2019	✖	02-Aug-2019	30-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	31-Jul-2019	✖	02-Aug-2019	31-Jul-2019	✖
EP074B: Oxygenated Compounds								
Soil Glass Jar - Unpreserved (EP074) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	16-Jul-2019	✖	02-Aug-2019	16-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	17-Jul-2019	✖	02-Aug-2019	17-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	18-Jul-2019	✖	02-Aug-2019	18-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	22-Jul-2019	✖	02-Aug-2019	22-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	25-Jul-2019	✖	02-Aug-2019	25-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	27-Jul-2019	✖	02-Aug-2019	27-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	30-Jul-2019	✖	02-Aug-2019	30-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	31-Jul-2019	✖	02-Aug-2019	31-Jul-2019	✖

(Preliminary Report)

Page : 18 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074C: Sulfonated Compounds								
Soil Glass Jar - Unpreserved (EP074) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	16-Jul-2019	✖	02-Aug-2019	16-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	17-Jul-2019	✖	02-Aug-2019	17-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	18-Jul-2019	✖	02-Aug-2019	18-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	22-Jul-2019	✖	02-Aug-2019	22-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	25-Jul-2019	✖	02-Aug-2019	25-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	27-Jul-2019	✖	02-Aug-2019	27-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	30-Jul-2019	✖	02-Aug-2019	30-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	31-Jul-2019	✖	02-Aug-2019	31-Jul-2019	✖
EP074D: Fumigants								
Soil Glass Jar - Unpreserved (EP074) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	16-Jul-2019	✖	02-Aug-2019	16-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	17-Jul-2019	✖	02-Aug-2019	17-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	18-Jul-2019	✖	02-Aug-2019	18-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	22-Jul-2019	✖	02-Aug-2019	22-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	25-Jul-2019	✖	02-Aug-2019	25-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	27-Jul-2019	✖	02-Aug-2019	27-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	30-Jul-2019	✖	02-Aug-2019	30-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	31-Jul-2019	✖	02-Aug-2019	31-Jul-2019	✖

(Preliminary Report)

Page : 19 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074E: Halogenated Aliphatic Compounds								
Soil Glass Jar - Unpreserved (EP074) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	16-Jul-2019	✖	02-Aug-2019	16-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	17-Jul-2019	✖	02-Aug-2019	17-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	18-Jul-2019	✖	02-Aug-2019	18-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	22-Jul-2019	✖	02-Aug-2019	22-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	25-Jul-2019	✖	02-Aug-2019	25-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	27-Jul-2019	✖	02-Aug-2019	27-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	30-Jul-2019	✖	02-Aug-2019	30-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	31-Jul-2019	✖	02-Aug-2019	31-Jul-2019	✖
EP074F: Halogenated Aromatic Compounds								
Soil Glass Jar - Unpreserved (EP074) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	16-Jul-2019	✖	02-Aug-2019	16-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	17-Jul-2019	✖	02-Aug-2019	17-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	18-Jul-2019	✖	02-Aug-2019	18-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	22-Jul-2019	✖	02-Aug-2019	22-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	25-Jul-2019	✖	02-Aug-2019	25-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	27-Jul-2019	✖	02-Aug-2019	27-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	30-Jul-2019	✖	02-Aug-2019	30-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	31-Jul-2019	✖	02-Aug-2019	31-Jul-2019	✖

(Preliminary Report)

Page : 20 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074G: Trihalomethanes								
Soil Glass Jar - Unpreserved (EP074) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	16-Jul-2019	✖	02-Aug-2019	16-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	17-Jul-2019	✖	02-Aug-2019	17-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	18-Jul-2019	✖	02-Aug-2019	18-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	22-Jul-2019	✖	02-Aug-2019	22-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	25-Jul-2019	✖	02-Aug-2019	25-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	27-Jul-2019	✖	02-Aug-2019	27-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	30-Jul-2019	✖	02-Aug-2019	30-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP074) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	31-Jul-2019	✖	02-Aug-2019	31-Jul-2019	✖
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP075(SIM)) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP075(SIM)) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP075(SIM)) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP075(SIM)) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP075(SIM)) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✔	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP075(SIM)) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✔	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP075(SIM)) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✔	06-Aug-2019	12-Sep-2019	✔

(Preliminary Report)

Page : 21 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓

(Preliminary Report)

Page : 22 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: SOIL

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075C: Phthalate Esters								
Soil Glass Jar - Unpreserved (EP075) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
EP075D: Nitrosamines								
Soil Glass Jar - Unpreserved (EP075) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓

(Preliminary Report)

Page : 23 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075E: Nitroaromatics and Ketones								
Soil Glass Jar - Unpreserved (EP075) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
EP075F: Haloethers								
Soil Glass Jar - Unpreserved (EP075) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓

(Preliminary Report)

Page : 24 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075G: Chlorinated Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
EP075H: Anilines and Benzidines								
Soil Glass Jar - Unpreserved (EP075) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓

(Preliminary Report)

Page : 25 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
EP075J: Organophosphorus Pesticides								
Soil Glass Jar - Unpreserved (EP075) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓
Soil Glass Jar - Unpreserved (EP075) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✓	06-Aug-2019	12-Sep-2019	✓

(Preliminary Report)

Page : 26 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	23-Jul-2019	✖	02-Aug-2019	23-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP071) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	24-Jul-2019	✖	02-Aug-2019	24-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP071) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	25-Jul-2019	✖	02-Aug-2019	25-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP071) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	29-Jul-2019	✖	02-Aug-2019	29-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP071) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	01-Aug-2019	✖	02-Aug-2019	01-Aug-2019	✖
Soil Glass Jar - Unpreserved (EP071) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	03-Aug-2019	✔	02-Aug-2019	03-Aug-2019	✔
Soil Glass Jar - Unpreserved (EP071) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✔	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	06-Aug-2019	✔	02-Aug-2019	06-Aug-2019	✔
Soil Glass Jar - Unpreserved (EP071) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✔	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	07-Aug-2019	✔	02-Aug-2019	07-Aug-2019	✔
Soil Glass Jar - Unpreserved (EP071) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✔	06-Aug-2019	12-Sep-2019	✔

(Preliminary Report)

Page : 27 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	23-Jul-2019	✖	02-Aug-2019	23-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP071) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	03-Aug-2019	23-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	24-Jul-2019	✖	02-Aug-2019	24-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP071) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	03-Aug-2019	24-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	25-Jul-2019	✖	02-Aug-2019	25-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP071) BH304 / 0.7E		11-Jul-2019	03-Aug-2019	25-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	29-Jul-2019	✖	02-Aug-2019	29-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP071) BH303 / 0.2E		15-Jul-2019	03-Aug-2019	29-Jul-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	01-Aug-2019	✖	02-Aug-2019	01-Aug-2019	✖
Soil Glass Jar - Unpreserved (EP071) BH307 / 0.5E		18-Jul-2019	03-Aug-2019	01-Aug-2019	✖	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	03-Aug-2019	✔	02-Aug-2019	03-Aug-2019	✔
Soil Glass Jar - Unpreserved (EP071) BH305 / 0.4E		20-Jul-2019	03-Aug-2019	03-Aug-2019	✔	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	06-Aug-2019	✔	02-Aug-2019	06-Aug-2019	✔
Soil Glass Jar - Unpreserved (EP071) BH309 / 0.4E		23-Jul-2019	03-Aug-2019	06-Aug-2019	✔	06-Aug-2019	12-Sep-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	07-Aug-2019	✔	02-Aug-2019	07-Aug-2019	✔
Soil Glass Jar - Unpreserved (EP071) BH301 / 0.15E		24-Jul-2019	03-Aug-2019	07-Aug-2019	✔	06-Aug-2019	12-Sep-2019	✔

(Preliminary Report)

Page : 28 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	02-Aug-2019	23-Jul-2019	✖	02-Aug-2019	23-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP080) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	02-Aug-2019	24-Jul-2019	✖	02-Aug-2019	24-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP080) BH304 / 0.7E		11-Jul-2019	02-Aug-2019	25-Jul-2019	✖	02-Aug-2019	25-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP080) BH303 / 0.2E		15-Jul-2019	02-Aug-2019	29-Jul-2019	✖	02-Aug-2019	29-Jul-2019	✖
Soil Glass Jar - Unpreserved (EP080) BH307 / 0.5E		18-Jul-2019	02-Aug-2019	01-Aug-2019	✖	02-Aug-2019	01-Aug-2019	✖
Soil Glass Jar - Unpreserved (EP080) BH305 / 0.4E		20-Jul-2019	02-Aug-2019	03-Aug-2019	✔	02-Aug-2019	03-Aug-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH309 / 0.4E		23-Jul-2019	02-Aug-2019	06-Aug-2019	✔	02-Aug-2019	06-Aug-2019	✔
Soil Glass Jar - Unpreserved (EP080) BH301 / 0.15E		24-Jul-2019	02-Aug-2019	07-Aug-2019	✔	02-Aug-2019	07-Aug-2019	✔
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	04-Aug-2019	05-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	04-Aug-2019	06-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH304 / 0.7E		11-Jul-2019	04-Aug-2019	07-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH307 / 0.5E		18-Jul-2019	04-Aug-2019	14-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH305 / 0.4E		20-Jul-2019	04-Aug-2019	16-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH301 / 0.15E		24-Jul-2019	04-Aug-2019	20-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔

(Preliminary Report)

Page : 29 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: SOIL

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	04-Aug-2019	05-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	04-Aug-2019	06-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH304 / 0.7E		11-Jul-2019	04-Aug-2019	07-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH307 / 0.5E		18-Jul-2019	04-Aug-2019	14-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH305 / 0.4E		20-Jul-2019	04-Aug-2019	16-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH301 / 0.15E		24-Jul-2019	04-Aug-2019	20-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	04-Aug-2019	05-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	04-Aug-2019	06-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH304 / 0.7E		11-Jul-2019	04-Aug-2019	07-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH307 / 0.5E		18-Jul-2019	04-Aug-2019	14-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH305 / 0.4E		20-Jul-2019	04-Aug-2019	16-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH301 / 0.15E		24-Jul-2019	04-Aug-2019	20-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X) BH306 / 0.5E,	BH306 / 1.5E	09-Jul-2019	04-Aug-2019	05-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH403 / 0.2E, BH404 / 0.5E	BH404 / 0.1E,	10-Jul-2019	04-Aug-2019	06-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH304 / 0.7E		11-Jul-2019	04-Aug-2019	07-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH307 / 0.5E		18-Jul-2019	04-Aug-2019	14-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH305 / 0.4E		20-Jul-2019	04-Aug-2019	16-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔
HDPE Soil Jar (EP231X) BH301 / 0.15E		24-Jul-2019	04-Aug-2019	20-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔

(Preliminary Report)

Page : 30 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X) BH306 / 0.5E, BH306 / 1.5E	09-Jul-2019	04-Aug-2019	05-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔	
HDPE Soil Jar (EP231X) BH403 / 0.2E, BH404 / 0.5E	10-Jul-2019	04-Aug-2019	06-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔	
HDPE Soil Jar (EP231X) BH304 / 0.7E	11-Jul-2019	04-Aug-2019	07-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔	
HDPE Soil Jar (EP231X) BH307 / 0.5E	18-Jul-2019	04-Aug-2019	14-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔	
HDPE Soil Jar (EP231X) BH305 / 0.4E	20-Jul-2019	04-Aug-2019	16-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔	
HDPE Soil Jar (EP231X) BH301 / 0.15E	24-Jul-2019	04-Aug-2019	20-Jan-2020	✔	05-Aug-2019	13-Sep-2019	✔	

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)	BH305 / 0.4E,	05-Aug-2019	06-Aug-2019	01-Feb-2020	✔	06-Aug-2019	01-Feb-2020	✔
BH301 / 0.15E,								
BH307 / 0.5E								
EG035C: Leachable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035C)	BH305 / 0.4E,	05-Aug-2019	----	----	----	06-Aug-2019	02-Sep-2019	✔
BH301 / 0.15E,								
BH307 / 0.5E								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))	BH305 / 0.4E,	05-Aug-2019	06-Aug-2019	12-Aug-2019	✔	06-Aug-2019	15-Sep-2019	✔
BH301 / 0.15E,								
BH307 / 0.5E								

(Preliminary Report)

Page : 31 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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)							
Moisture Content	EA055	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	11	18.18	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
Polychlorinated Biphenyls (PCB)	EP066	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	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
TRH - Semivolatile Fraction	EP071	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	11	9.09	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
Polychlorinated Biphenyls (PCB)	EP066	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	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	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	11	9.09	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
Polychlorinated Biphenyls (PCB)	EP066	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TCLP for Non & Semivolatile Analytes	EN33a	1	10	10.00	9.09	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	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	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	11	9.09	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
Polychlorinated Biphenyls (PCB)	EP066	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard

(Preliminary Report)

Page : 32 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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							
Total Mercury by FIMS	EG035T	1	20	5.00	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	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

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)							
Leachable Mercury by FIMS	EG035C	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	12	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Mercury by FIMS	EG035C	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Mercury by FIMS	EG035C	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Mercury by FIMS	EG035C	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	12	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard

(Preliminary Report)

Page : 33 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



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
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	SOIL	In house: Referenced to Ahern et al 2004 - a suspension peroxide oxidation method following the 'sulfur trail' by determining the level of 1M KCL extractable sulfur and the sulfur level after oxidation of soil sulphides. The 'acidity trail' is followed by measurement of TAA, TPA and TSA. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
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	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
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)
Leachable Mercury by FIMS	EG035C	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the TCLP solution. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ 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)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (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 SnCl ₂ 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)
Polychlorinated Biphenyls (PCB)	EP066	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 method is compliant with NEPM (2013) Schedule B(3) (Method 504)
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. Compliant with NEPM amended 2013.
Volatile Organic Compounds	EP074	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. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

(Preliminary Report)

Page : 34 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Analytical Methods	Method	Matrix	Method Descriptions
Semivolatile Organic Compounds	EP075	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 502)
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. Compliant with NEPM amended 2013.
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. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1
Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
TCLP for Non & Semivolatile Analytes	EN33a	SOIL	In house QWI-EN/33 referenced to USEPA SW846-1311: The TCLP procedure is designed to determine the mobility of both organic and inorganic analytes present in wastes. The standard TCLP leach is for non-volatile and Semivolatile test parameters.
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
Separatory Funnel Extraction of Liquids	ORG14	SOIL	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
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.

(Preliminary Report)

Page : 35 of 35
Work Order : ES1924021
Client : GOLDER ASSOCIATES
Project : 19125312



Lab / Address: Newcas
Origin: Asbestos
Remarks: by / Lab: Brisbane



CHAIN OF CUSTODY

ALS Laboratory: please tick →

SYDNEY: 277 Victoria Road, Sydney NSW 1570
Ph: 02 9375 5555 Fax: 02 9375 5556
E: sales@als.com.au
M: 02 9375 5555
Perth: 4855 0433 E: perth@als.com.au

Brisbane: 277 Victoria Road, Brisbane QLD 4000
Ph: 07 3251 2222 Fax: 07 3251 2223
E: sales@als.com.au
M: 07 3251 2222
Towsville: 4781 0000 E: towsville@als.com.au

Adelaide: 277 Victoria Road, Adelaide SA 5000
Ph: 08 8333 2155 E: adelaide@als.com.au

Perth: 277 Victoria Road, Perth WA 6000
Ph: 08 9375 5555 E: perth@als.com.au

CLIENT: Golder Associates	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Micro Trace Elements)	☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle):	
OFFICE: Sydney	ALS QUOTE NO.:	☐ Non Standard or urgent TAT (List due date):	Quality Seal intact? Yes No NA	
PROJECT: 10125312			Field and/or Lab. for each present, both marked? Yes No NA	
ORDER NUMBER:			Sampled in presence of ALS staff? Yes No NA	
PROJECT MANAGER: Eric Woon	CONTACT PH: 0413 814 815	COC SEQUENCE NUMBER (Circle):	Relinquished by: [Signature]	
SAMPLER: [Redacted]	SAMPLER MOBILE: [Redacted]	COC: 1 2 3 4 5 6 7	RECEIVED BY: [Signature]	
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	OF: 1 2 3 4 5 6 7	DATE/TIME: 31/7/19 11:30am	
Email Reports to (will default to PM if no other addresses are listed): erwoon@golder.com.au			DATE/TIME:	
Email Invoice to (will default to PM if no other addresses are listed): erwoon@golder.com.au			DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:																
All Use Only																
SAMPLE DETAILS MATRIX: Solid(S) Water(W)				CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (0.45µm filtered bottle required)										Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TEH (Cd,Cu,Pb) / BTEXN / 8 metals / PAHs	PCBs	VOC / SVOC	TCLP Metals	TCLP PAHs	PFAS - Full Suite (28 analytes)	Asbestos presence/absence	ASS Field Screen	SPOCAS Suite	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
1	BH301 / 0.15E	24/07/2019		250 glass jar	1	1	1	1	1	1						
2	BH301 / 0.15E	24/07/2019		200 plastic jar	1						1					
3	BH301 / 0.15E	24/07/2019		50 ml plastic bag	1							1				
4	BH303 / 0.2E	15/07/2019		250 glass jar	1	1	1	1	1	1						
5	BH303 / 0.2E	15/07/2019		200 plastic jar	1						1					
6	BH303 / 0.2E	15/07/2019		50 ml plastic bag	1							1				
7	BH304 / 0.7E	11/07/2019		250 glass jar	1	1	1	1	1	1						
8	BH304 / 0.7E	11/07/2019		200 plastic jar	1						1					
9	BH304 / 0.7E	11/07/2019		50 ml plastic bag	1							1				
10	BH304 / 0.7E	11/07/2019		200 ml plastic bag	1								1	1		
11	BH305 / 0.4E	20/07/2019		250 glass jar	1	1	1	1	1	1						
12	BH305 / 0.4E	20/07/2019		200 plastic jar	1						1					
13	BH305 / 0.4E	20/07/2019		200 ml plastic bag	1								1	1		
14	BH306 / 0.5E	9/07/2019		250 glass jar	1	1	1	1	1	1						
15	BH306 / 0.5E	9/07/2019		200 plastic jar	1						1					
16	BH306 / 0.5E	9/07/2019		50 ml plastic bag	1							1				
17	BH306 / 1.5E	9/07/2019		250 glass jar	1	1	1	1	1	1						
18	BH306 / 1.5E	9/07/2019		200 plastic jar	1						1					
19	BH306 / 1.5E	9/07/2019		50 ml plastic bag	1							1				
20	BH307 / 0.5E	18/07/2019		250 glass jar	1	1	1	1	1	1						
21	BH307 / 0.5E	18/07/2019		200 plastic jar	1						1					
22	BH307 / 0.5E	18/07/2019		50 ml plastic bag	1							1				
23	BH307 / 0.5E	18/07/2019		200 ml plastic bag	1								1	1		
24	BH309 / 0.4E	23/07/2019		250 glass jar	1	1	1	1	1	1						
25	BH309 / 0.4E	23/07/2019		200 ml plastic bag	1								1	1		
26	BH403 / 0.2E	10/07/2019		250 glass jar	1	1	1	1	1	1						
27	BH403 / 0.2E	10/07/2019		200 plastic jar	1						1					
28	BH403 / 0.2E	10/07/2019		50 ml plastic bag	1							1				
29	BH404 / 0.1E	10/07/2019		250 glass jar	1	1	1	1	1	1						
30	BH404 / 0.1E	10/07/2019		200 plastic jar	1						1					
31	BH404 / 0.1E	10/07/2019		50 ml plastic bag	1							1				
32	BH404 / 0.5E	10/07/2019		250 glass jar	1	1	1	1	1	1						
33	BH404 / 0.5E	10/07/2019		200 plastic jar	1						1					
34	BH404 / 0.5E	10/07/2019		50 ml plastic bag	1							1				
TOTAL						11	11	11	11	11	10	6	4	4		
Environmental Division Sydney																
Work Order Reference																
Preservat: S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Air-tight Unpreserved Plastic HSG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;																

Water Container Codes: P = Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Std
Z = Zinc Aspartate Preserved Bottle; E = EDTA Pres

Preservative: S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic
H2SO4 = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
nd Reg.

Environmental Division
Sydney
Work Order Reference
ES1924021



Telephone: +61-2-8784 8555



CHAIN OF CUSTODY

Client: **Goldstar Associates**
Project: **1918512**
Project Manager: **Erica Wilson**

Site: **1918512**
Sample ID: **1918512**
Sample Name: **1918512**

Sample Type: **1918512**
Sample Size: **1918512**
Sample Location: **1918512**

Sample Date: **1918512**
Sample Time: **1918512**
Sample Location: **1918512**

Sample Date: **1918512**
Sample Time: **1918512**
Sample Location: **1918512**

Sample Date: **1918512**
Sample Time: **1918512**
Sample Location: **1918512**

Sample Date: **1918512**
Sample Time: **1918512**
Sample Location: **1918512**

Sample Date: **1918512**
Sample Time: **1918512**
Sample Location: **1918512**

CLIENT:	Goldstar Associates	TESTING REQUIREMENTS:	☐ Standard TAT (48 hrs) ☐ Expedited TAT (24 hrs) ☐ Non Standard or urgent TAT (48 hrs) (if not stated)
PROJECT:	1918512	AS QUOTE NO.:	
PROJECT MANAGER:	Erica Wilson	CONTACT NO.:	0410 814 919
SAMPLE:		SAMPLE MODULE:	
OCC:	AS 157 (YES / NO)	EOD FORMAT (or default):	
Email Reports to (not adding to PM email address, see field):	Email Reports to (not adding to PM email address, see field):		
Email Invoices to (not adding to PM email address, see field):	Email Invoices to (not adding to PM email address, see field):		
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:			
RECEIVED BY:	RECEIVED BY:		
DATE/TIME:	DATE/TIME:		
RECEIVED BY:	RECEIVED BY:		
DATE/TIME:	DATE/TIME:		

SAMPLE DETAILS		CONTAINER INFORMATION		ANALYSIS REQUIRED										Additional Information
MATRIX (SIZES/WEIGHTS)				including BUTTER (ONLY State Codes must be filled in at least 100% of the time)										Comments for any containers with multiple analysis required or specific DO NOT REMOVE
				Please indicate or report the quantity of each matrix or material that was analyzed										
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH (C6-C40) / BTEXN / 8 metals / PAHs	PCBs	VOC / SVOC	TCLP Metals	TCLP PAHs	PFAS - Full Suite (28 analytes)	Asbestos presence/absence	ASS Field Screen	SPOCAS Suite
1	BH301 / 0.15E	24-07-19		250 glass jar	1	1	1	1	1	1				
2	BH301 / 0.15E	24-07-19		200 plastic jar	1									
3	BH301 / 0.15E	24-07-19		50 ml plastic bag	1									
4	BH303 / 0.2E	15-07-19		250 glass jar	1	1	1	1	1	1				
5	BH303 / 0.2E	15-07-19		200 plastic jar	1									
6	BH303 / 0.2E	15-07-19		50 ml plastic bag	1									
7	BH304 / 0.7E	11-07-18		250 glass jar	1	1	1	1	1	1				
8	BH304 / 0.7E	11-07-18		200 plastic jar	1									
9	BH304 / 0.7E	11-07-18		50 ml plastic bag	1									
10	BH304 / 0.7E	11-07-18		200 ml plastic bag	1									
11	BH305 / 0.4E	20-07-19		250 glass jar	1	1	1	1	1	1				
12	BH305 / 0.4E	20-07-19		200 plastic jar	1									
13	BH305 / 0.4E	20-07-19		50 ml plastic bag	1									
14	BH306 / 0.5E	09-07-19		250 glass jar	1	1	1	1	1	1				
15	BH306 / 0.5E	09-07-19		200 plastic jar	1									
16	BH306 / 0.5E	09-07-19		50 ml plastic bag	1									
17	BH306 / 1.5E	09-07-19		250 glass jar	1	1	1	1	1	1				
18	BH306 / 1.5E	09-07-19		200 plastic jar	1									
19	BH306 / 1.5E	09-07-19		50 ml plastic bag	1									
20	BH306 / 1.5E	09-07-19		200 ml plastic bag	1									
21	BH307 / 0.5E	18-07-19		250 glass jar	1	1	1	1	1	1				
22	BH307 / 0.5E	18-07-19		200 plastic jar	1									
23	BH307 / 0.5E	18-07-19		50 ml plastic bag	1									
24	BH307 / 0.5E	18-07-19		200 ml plastic bag	1									
25	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
26	BH308 / 0.4E	23-07-19		200 ml plastic bag	1									
27	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
28	BH308 / 0.4E	23-07-19		200 plastic jar	1									
29	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
30	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
31	BH308 / 0.4E	23-07-19		200 plastic jar	1									
32	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
33	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
34	BH308 / 0.4E	23-07-19		200 plastic jar	1									
35	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
36	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
37	BH308 / 0.4E	23-07-19		200 plastic jar	1									
38	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
39	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
40	BH308 / 0.4E	23-07-19		200 plastic jar	1									
41	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
42	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
43	BH308 / 0.4E	23-07-19		200 plastic jar	1									
44	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
45	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
46	BH308 / 0.4E	23-07-19		200 plastic jar	1									
47	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
48	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
49	BH308 / 0.4E	23-07-19		200 plastic jar	1									
50	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
51	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
52	BH308 / 0.4E	23-07-19		200 plastic jar	1									
53	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
54	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
55	BH308 / 0.4E	23-07-19		200 plastic jar	1									
56	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
57	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
58	BH308 / 0.4E	23-07-19		200 plastic jar	1									
59	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
60	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
61	BH308 / 0.4E	23-07-19		200 plastic jar	1									
62	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
63	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
64	BH308 / 0.4E	23-07-19		200 plastic jar	1									
65	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
66	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
67	BH308 / 0.4E	23-07-19		200 plastic jar	1									
68	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
69	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
70	BH308 / 0.4E	23-07-19		200 plastic jar	1									
71	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
72	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
73	BH308 / 0.4E	23-07-19		200 plastic jar	1									
74	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
75	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
76	BH308 / 0.4E	23-07-19		200 plastic jar	1									
77	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
78	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
79	BH308 / 0.4E	23-07-19		200 plastic jar	1									
80	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
81	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
82	BH308 / 0.4E	23-07-19		200 plastic jar	1									
83	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
84	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
85	BH308 / 0.4E	23-07-19		200 plastic jar	1									
86	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
87	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
88	BH308 / 0.4E	23-07-19		200 plastic jar	1									
89	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
90	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
91	BH308 / 0.4E	23-07-19		200 plastic jar	1									
92	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
93	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
94	BH308 / 0.4E	23-07-19		200 plastic jar	1									
95	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
96	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
97	BH308 / 0.4E	23-07-19		200 plastic jar	1									
98	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
99	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
100	BH308 / 0.4E	23-07-19		200 plastic jar	1									
101	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
102	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
103	BH308 / 0.4E	23-07-19		200 plastic jar	1									
104	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
105	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
106	BH308 / 0.4E	23-07-19		200 plastic jar	1									
107	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
108	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
109	BH308 / 0.4E	23-07-19		200 plastic jar	1									
110	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
111	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
112	BH308 / 0.4E	23-07-19		200 plastic jar	1									
113	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
114	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
115	BH308 / 0.4E	23-07-19		200 plastic jar	1									
116	BH308 / 0.4E	23-07-19		50 ml plastic bag	1									
117	BH308 / 0.4E	23-07-19		250 glass jar	1	1	1	1	1	1				
118	BH308 / 0.4E	23-07-19		200 plastic jar	1									
119	BH308 / 0.4E	23-07-19		50 ml plastic bag										

QUALITY CONTROL REPORT

Work Order	: ES1924476	Page	: 1 of 11
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Sydney
Contact	: BERNIE FRANCIS	Contact	: Customer Services ES
Address	: LEVEL 1, 124 PACIFIC HIGHWAY ST LEONARDS NSW, AUSTRALIA 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 08 8213 2100	Telephone	: +61-2-8784 8555
Project	: 19125312	Date Samples Received	: 02-Aug-2019
Order number	: ---	Date Analysis Commenced	: 02-Aug-2019
C-O-C number	: ---	Issue Date	: 08-Aug-2019
Sampler	: ---		
Site	: Liverpool Civic Place		
Quote number	: EN/002/18 National BQ		
No. of samples received	: 6		
No. of samples analysed	: 6		



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, 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: **WATER**

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: 2506829)									
ES1924456-007	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	62	63	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	62	63	0.00	0% - 20%
ES1924496-014	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	14	14	0.00	0% - 50%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	14	14	0.00	0% - 50%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2504744)									
ES1924439-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	802	768	4.28	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2505116)									
ES1924403-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	33	38	15.7	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 2504745)									
ES1924476-002	BH306	ED045G: Chloride	16887-00-6	1	mg/L	307	310	0.990	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 2505115)									
ME1900978-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	73	70	4.20	0% - 20%
ES1924305-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	15	14	0.00	0% - 50%
ED093F: Dissolved Major Cations (QC Lot: 2505444)									
ES1924413-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	13	13	0.00	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	10	10	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	32	31	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.00	No Limit
ES1924338-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	94	99	4.88	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	35	37	7.16	0% - 20%



Sub-Matrix: **WATER**

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 (%)
ED093F: Dissolved Major Cations (QC Lot: 2505444) - continued									
ES1924338-001	Anonymous	ED093F: Sodium	7440-23-5	1	mg/L	5	6	0.00	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	1	1	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2505445)									
ES1924413-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		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: Manganese	7439-96-5	0.001	mg/L	0.604	0.610	1.01	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.007	0.006	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	2.47	2.50	0.938	0% - 20%
		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	3.90	4.03	3.15	0% - 20%
ES1924338-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		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: Manganese	7439-96-5	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	<0.05	<0.05	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2505447)									
ES1924476-004	BH2	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.004	0.004	0.00	No Limit
		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	0.003	0.003	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.038	0.036	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.005	0.005	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	<0.05	<0.05	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 2505443)									
ES1924429-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1924338-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 2506827)									
ES1924456-003	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	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 (%)
EK040P: Fluoride by PC Titrator (QC Lot: 2506827) - continued									
ES1924338-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 2506831)									
ES1924506-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2506938)									
ES1924413-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES1924476-004	BH2	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2506938)									
ES1924413-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES1924476-004	BH2	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2506938)									
ES1924413-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	3	3	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
ES1924476-004	BH2	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2507624)									
EP1907593-001	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2507624)									
EP1907593-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit

Page : 5 of 11
 Work Order : ES1924476
 Client : GOLDER ASSOCIATES
 Project : 19125312



Sub-Matrix: **WATER**

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 (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2507624) - continued									
EP1907593-001	Anonymous	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2507624)									
EP1907593-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2507624)									
EP1907593-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 2507624)									
EP1907593-001	Anonymous	EP231X: Sum of PFAS	----	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 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**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
ED037P: Alkalinity by PC Titrator (QCLot: 2506829)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	85.0	81	111
				----	50 mg/L	93.9	70	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2504744)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	108	82	122
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2505116)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	99.9	82	122
ED045G: Chloride by Discrete Analyser (QCLot: 2504745)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	101	81	127
				<1	1000 mg/L	98.1	81	127
ED045G: Chloride by Discrete Analyser (QCLot: 2505115)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	106	81	127
				<1	1000 mg/L	94.8	81	127
ED093F: Dissolved Major Cations (QCLot: 2505444)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	96.8	80	114
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	98.2	90	116
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	98.9	82	120
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	96.0	85	113
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505445)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	92.6	80	116
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.7	85	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.5	84	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.4	85	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.4	81	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.2	83	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	91.4	82	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.0	82	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	92.8	81	117
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	90.9	82	112
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505447)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	88.8	80	116
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.7	85	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.8	84	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	87.1	85	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	85.2	81	111



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505447) - continued								
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.9	83	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	89.6	82	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	83.9	82	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.8	81	117
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	87.6	82	112
EG035F: Dissolved Mercury by FIMS (QCLot: 2505443)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.9	83	105
EK040P: Fluoride by PC Titrator (QCLot: 2506827)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	105	82	116
EK040P: Fluoride by PC Titrator (QCLot: 2506831)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	100	82	116
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2505004)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	74.1	50	94
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	69.7	64	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	72.4	62	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	71.8	64	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	79.1	63	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	76.5	64	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	82.3	64	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	84.0	63	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	67.6	64	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	74.2	63	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	72.4	62	119
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	76.4	63	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	71.7	63	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	67.3	60	118
EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	69.6	61	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	81.6	59	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2505005)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	93.8	56	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	78.5	72	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	63.3	56	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2506938)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	95.0	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2505005)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	64.0	58	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	84.5	63	110



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2505005) - continued								
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	102	62	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2506938)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	97.1	75	127
EP080: BTEXN (QCLot: 2506938)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	93.2	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	104	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	108	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	108	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	111	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	110	70	120
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2507624)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	97.4	70	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	111	70	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	112	70	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	106	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	90.0	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	99.2	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2507624)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	79.6	70	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	119	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	93.2	70	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	98.2	70	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	97.4	70	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	107	70	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	112	70	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	108	70	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	93.0	70	130
EP231X: Perfluorotridecanoic acid (PFTriDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	106	70	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	117	70	150
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2507624)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	76.6	70	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	113	70	150
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	120	70	150
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	1.25 µg/L	103	70	150
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	116	70	150



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2507624) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	116	70	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	117	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2507624)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	108	70	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	111	70	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	106	70	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	118	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.

Sub-Matrix: **WATER**

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: 2504744)							
ES1924439-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2505116)							
ES1924403-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	72.8	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 2504745)							
ES1924476-002	BH306	ED045G: Chloride	16887-00-6	250 mg/L	95.5	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 2505115)							
ES1924305-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	108	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505445)							
ES1924344-006	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	101	70	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	92.8	70	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	91.8	70	130
		EG020A-F: Copper	7440-50-8	1 mg/L	88.4	70	130
		EG020A-F: Lead	7439-92-1	1 mg/L	103	70	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	85.6	70	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	92.5	70	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	92.4	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505447)							
ES1924506-001	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	97.2	70	130

Page : 10 of 11
 Work Order : ES1924476
 Client : GOLDER ASSOCIATES
 Project : 19125312



Sub-Matrix: **WATER**

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
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505447) - continued							
ES1924506-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.25 mg/L	98.0	70	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	94.2	70	130
		EG020A-F: Copper	7440-50-8	1 mg/L	92.0	70	130
		EG020A-F: Lead	7439-92-1	1 mg/L	93.0	70	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	93.1	70	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	94.0	70	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	98.5	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 2505443)							
ES1924191-003	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	85.7	70	130
EK040P: Fluoride by PC Titrator (QCLot: 2506827)							
ES1924338-002	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	100	70	130
EK040P: Fluoride by PC Titrator (QCLot: 2506831)							
ES1924506-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	88.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2506938)							
ES1924413-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	105	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2506938)							
ES1924413-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	103	70	130
EP080: BTEXN (QCLot: 2506938)							
ES1924413-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	94.2	70	130
		EP080: Toluene	108-88-3	25 µg/L	102	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	106	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	106	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	108	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	102	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2507624)							
EP1907593-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	98.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	110	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	117	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	97.8	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	90.2	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	97.6	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2507624)							
EP1907593-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	117	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	104	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	99.8	50	130



Sub-Matrix: **WATER**

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: 2507624) - continued							
EP1907593-001	Anonymous	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	96.8	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	109	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	110	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	107	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	116	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	94.2	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.5 µg/L	91.0	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	106	50	150
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2507624)							
EP1907593-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	75.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	111	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	121	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	1.25 µg/L	119	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	122	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	120	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	106	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2507624)							
EP1907593-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	109	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	102	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	105	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	120	50	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES1924476	Page	: 1 of 8
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Sydney
Contact	: BERNIE FRANCIS	Telephone	: +61-2-8784 8555
Project	: 19125312	Date Samples Received	: 02-Aug-2019
Site	: Liverpool Civic Place	Issue Date	: 08-Aug-2019
Sampler	: ----	No. of samples received	: 6
Order number	:	No. of samples analysed	: 6

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

- **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.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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	ES1924439--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.

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	8	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	8	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED037P: Alkalinity by PC Titrator							
HDPE (no PTFE) (ED037-P) BH304, BH1, BH306, BH2	02-Aug-2019	----	----	----	05-Aug-2019	16-Aug-2019	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
HDPE (no PTFE) (ED041G) BH306	02-Aug-2019	----	----	----	02-Aug-2019	30-Aug-2019	✓
HDPE (no PTFE) (ED041G) BH304, BH2, BH1,	02-Aug-2019	----	----	----	03-Aug-2019	30-Aug-2019	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED045G: Chloride by Discrete Analyser								
HDPE (no PTFE) (ED045G) BH306		02-Aug-2019	----	----	----	02-Aug-2019	30-Aug-2019	✓
HDPE (no PTFE) (ED045G) BH304, BH2	BH1,	02-Aug-2019	----	----	----	03-Aug-2019	30-Aug-2019	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) BH304, BH1,	BH306, BH2	02-Aug-2019	----	----	----	05-Aug-2019	30-Aug-2019	✓
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) BH304, BH1,	BH306, BH2	02-Aug-2019	----	----	----	05-Aug-2019	29-Jan-2020	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) BH304, BH1,	BH306, BH2	02-Aug-2019	----	----	----	05-Aug-2019	30-Aug-2019	✓
EK040P: Fluoride by PC Titrator								
HDPE (no PTFE) (EK040P) BH304, BH1,	BH306, BH2	02-Aug-2019	----	----	----	05-Aug-2019	30-Aug-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BH304, BH1,	BH306, BH2	02-Aug-2019	03-Aug-2019	09-Aug-2019	✓	07-Aug-2019	12-Sep-2019	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) BH304, BH1,	BH306, BH2	02-Aug-2019	03-Aug-2019	09-Aug-2019	✓	07-Aug-2019	12-Sep-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) BH304, BH1,	BH306, BH2	02-Aug-2019	07-Aug-2019	16-Aug-2019	✓	07-Aug-2019	16-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) Trip Blank		31-Jul-2019	07-Aug-2019	14-Aug-2019	✓	07-Aug-2019	14-Aug-2019	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
BH304, BH1,	BH306, BH2	02-Aug-2019	03-Aug-2019	09-Aug-2019	✔	07-Aug-2019	12-Sep-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080)								
BH304, BH1,	BH306, BH2	02-Aug-2019	07-Aug-2019	16-Aug-2019	✔	07-Aug-2019	16-Aug-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080)								
Trip Blank		31-Jul-2019	07-Aug-2019	14-Aug-2019	✔	07-Aug-2019	14-Aug-2019	✔
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
BH304, BH1,	BH306, BH2	02-Aug-2019	07-Aug-2019	16-Aug-2019	✔	07-Aug-2019	16-Aug-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080)								
Trip Spike		30-Jul-2019	07-Aug-2019	13-Aug-2019	✔	07-Aug-2019	13-Aug-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080)								
Trip Blank		31-Jul-2019	07-Aug-2019	14-Aug-2019	✔	07-Aug-2019	14-Aug-2019	✔
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
BH306,	BH2	02-Aug-2019	06-Aug-2019	29-Jan-2020	✔	06-Aug-2019	29-Jan-2020	✔
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
BH306,	BH2	02-Aug-2019	06-Aug-2019	29-Jan-2020	✔	06-Aug-2019	29-Jan-2020	✔
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
BH306,	BH2	02-Aug-2019	06-Aug-2019	29-Jan-2020	✔	06-Aug-2019	29-Jan-2020	✔
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
BH306,	BH2	02-Aug-2019	06-Aug-2019	29-Jan-2020	✔	06-Aug-2019	29-Jan-2020	✔
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
BH306,	BH2	02-Aug-2019	06-Aug-2019	29-Jan-2020	✔	06-Aug-2019	29-Jan-2020	✔



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)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	11	27.27	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	19	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	11	36.36	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	2	11	18.18	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	2	11	18.18	5.00	✓	NEPM 2013 B3 & ALS QC Standard



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	
Matrix Spikes (MS) - Continued							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	19	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	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)
Sulfate (Turbidimetric) as SO ₄ 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO ₄ . 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 BaSO ₄ suspension is measured by a photometer and the SO ₄ -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 liberated thiocyanate forms highly-coloured ferric thiocyanate 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 (SnCl ₂)(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 SnCl ₂ 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)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO ₄ DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1

Preparation Methods	Method	Matrix	Method Descriptions
Preparation for PFAS in water.	EP231-PR	WATER	Method presumes direct injection without workup. Preparation includes addition of internal standard and surrogate, and filtration prior to analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Grace White

From: Grace White
Sent: Monday, 5 August 2019 3:52 PM
To: Loren Schiavon
Cc: Helen Simpson
Subject: ES1924476 - Add PFAS

Hi Loren,

As per a client request, can you please arrange adding PFAS EP231X to samples 002 and 004? Can cancel the Cations/Anions coming from this bottle if need be.

Thank you!

Grace White
Client Services Officer, Environmental
Sydney



T +61 2 8784 8555 **D** +61 2 8784 8531
F +61 2 8784 8500
grace.white@alsglobal.com
277-289 Woodpark Road
Smithfield, NSW, 2164

★Subscribe    

We are keen for your feedback! [Please click here for your 3 minute survey](#)

EnviroMail™ 00 – All EnviroMails™ in one convenient library.

Recent releases (click to access directly):

EnviroMail™ 124 – PFOS Analysis to Freshwater Species Protection Lvl 99%



See how ALS is making sampling easier! [Register](#) your interest.

Right Solutions · Right Partner
www.alsglobal.com

Environmental Division
Sydney

Work Order Reference
ES1924476



Telephone : + 61-2-8784 8555

D-2 Summary Table Analytical Results

Liverpool Civic Place Soil NSW Waste Class

				CRCCARE 2011 HSLs Intrusive Maintenance Worker Direct Contact	CT1 General Solid Waste	CT2 Restricted Solid Waste	NEPM 2013 HIL- Commercial/Industrial D Soil	NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																	
								0-1m	1-2m	2-4m	>4m														
Method_Type	ChemName	output unit	EQL																						
Asbestos Identification in Soils	Asbestos Type	No												1	1	1	1	1	-	1	-	1	1	1	
	APPROVED IDENTIFIER:	--												1	1	1	1	1	-	1	-	1	1	1	
	Asbestos (1-Detect or <1-Non-Detect)	No	0.1											0	0	0	0	0	1	-	0	-	0	0	0
	Asbestos Fines	mg/kg	5											0	0	0	0	0	-	0	-	0	0	0	
	Description	--												1	1	1	1	1	-	1	-	1	1	1	
ASS Field Screening Analysis	Sample weight (dry)	g	0.01											14.8	38.4	17	26.6	52.2	-	43.1	-	48.1	51.8	28.1	
	pH (Field ox)	pH_Units	0.1											-	-	5.2	-	-	5.3	4.3	4.2	-	-	-	
	Reaction Rate	-	1											-	-	2	-	-	2	2	2	-	-	-	
	pH (F)	pH Unit	0.1											-	-	7.5	-	-	8.2	5.6	5.5	-	-	-	
Moisture Content	Moisture Content (dried @ 40°C)	%	0.1											25.1 - 25.8	12.6	15.1 - 16.7	13.1 - 13.5	8 - 13.4	14.6 - 15.2	16.3	19.4	8.2 - 14.1	6.6 - 9.4	12 - 12.8	
PAH/Phenols (SIM)	Acenaphthene	mg/kg	0.5											<0.5	<0.5	<0.5	0.7	<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	
	Anthracene	mg/kg	0.5											<0.5	<0.5	<0.5	3.8	<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	14.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Benzo(a)pyrene	mg/kg	0.5											<0.5	<0.5	<0.5	17.5	<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	25.2	<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	25.2	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	25.2	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	18.3	<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	10.2	<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	6.7	<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	13	<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	2.7	<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	15.2	<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	0.7	<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	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
	Naphthalene	mg/kg	0.5	29000						NL	NL	NL	NL	<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	10.1	<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	16.5	<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											<0.5	<0.5	<0.5	138	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Per- and Polyfluoroalkyl Substances (PFAS) by LCMS	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	
	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	
	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	
	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	
	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	
	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	
	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	
	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	
	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	
	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	
	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	
	PFDcS	mg/kg	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	
	Sum of PFHxS and PFOS (lab reported)	mg/kg	0.0002											<0.0002	-	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	
	Sum of WA DER PFAS (n=10)	mg/kg	0.0002											<0.0002	-	<0.0002	<0.0002	0.001	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	
	Sum of PFASs (n=28)	mg/kg	0.0002											<0.0002	-	<0.0002	<0.0002	0.001	<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	
	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	
	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	
	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	
	Perfluorooctanesulfonic acid (PFOS)3	mg/kg	0.0002											<0.0002	-	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	-	<0.0002	<0.0002	<0.0002	
	Perfluorooctanoate (PFOA)	mg/kg	0.0002											<0.0002	-	<0.0002	<0.0002	0.0004	<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	
	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	
	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	
	6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	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	
	Perfluorooctanesulfonamide (PFOSA)	mg/kg	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	
	Perfluorotridecanoic acid (PFTriDA)	mg/kg	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	-</				

Liverpool Civic Place Soil NSW Waste Class

[Filter]

[Filter]

Liverpool Civic Place Soil NSW Waste Class

Liverpool Civic Place Soil NSW Waste Class				Field_ID		BH301 / 0.15E	BH303 / 0.2E	BH304 / 0.7E	BH305 / 0.4E	BH306 / 0.5E	BH306 / 1.5E	BH307 / 0.5E	BH309 / 0.4E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.5E			
				Location_Code		BH301 / 0.15E	BH303 / 0.2E	BH304 / 0.7E	BH305 / 0.4E	BH306 / 0.5E	BH306 / 1.5E	BH307 / 0.5E	BH309 / 0.4E	BH403 / 0.2E	BH404 / 0.1E	BH404 / 0.5E			
				Sample_Depth_Range															
				Sampled_Date_Time		24/07/2019	15/07/2019	11/07/2019	20/07/2019	9/07/2019	9/07/2019	18/07/2019	23/07/2019	10/07/2019	10/07/2019	10/07/2019			
				Matrix_Description															
				CRCCARE 2011 HSLs Intrusive Maintenance Worker Direct Contact	CT1 General Solid Waste	CT2 Restricted Solid Waste	NEPM 2013 HIL- Commercial/Industrial D Soil	NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL											
								0-1m	1-2m	2-4m	>4m								
Method_Type	ChemName	output unit	EQL																
	1,1,1-Trichloroethane	mg/kg	0.5		600	2400						<0.5	<0.5	<0.5	<0.5	<0.5			
	1,1,2-Trichloroethane	mg/kg	0.5		24	96						<0.5	<0.5	<0.5	<0.5	<0.5			
	1,2,3-Trichloropropane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	1,2-Dibromo-3-chloropropane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	1,2-Dibromoethane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	1,1-Dichloroethane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	1,2-Dichloroethane	mg/kg	0.5		10	40						<0.5	<0.5	<0.5	<0.5	<0.5			
	1,1-Dichloroethene	mg/kg	0.5		14	56						<0.5	<0.5	<0.5	<0.5	<0.5			
	cis-1,2-Dichloroethene	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	trans-1,2-dichloroethene	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	1,2-Dichloropropane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	1,3-Dichloropropane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	2,2-Dichloropropane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	1,1-Dichloropropene	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	cis-1,3-Dichloropropene	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	trans-1,3-dichloropropene	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	cis-1,4-Dichloro-2-butene	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	trans-1,4-Dichloro-2-butene	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	Bromodichloromethane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	Bromoform	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	Bromomethane	mg/kg	5									<5	<5	<5	<5	<5			
	Carbon disulfide	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	Carbon tetrachloride	mg/kg	0.5		10	40						<0.5	<0.5	<0.5	<0.5	<0.5			
	Chlorodibromomethane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	Chloroethane	mg/kg	5									<5	<5	<5	<5	<5			
	Chloroform	mg/kg	0.5		120	480						<0.5	<0.5	<0.5	<0.5	<0.5			
	Chloromethane	mg/kg	5									<5	<5	<5	<5	<5			
	Dibromomethane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	Dichlorodifluoromethane	mg/kg	5									<5	<5	<5	<5	<5			
	Iodomethane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	Pentachloroethane	mg/kg	0.5									<0.5	<0.5	<0.5	<0.5	<0.5			
	Trichloroethene	mg/kg	0.5		10	40						<0.5	<0.5	<0.5	<0.5	<0.5			
	Tetrachloroethene	mg/kg	0.5		14	56						<0.5	<0.5	<0.5	<0.5	<0.5			
	Trichlorofluoromethane	mg/kg	5									<5	<5	<5	<5	<5			
	Vinyl chloride	mg/kg	5		4	16						<5	<5	<5	<5	<5			

CT1 / TCLP1 General Soild Waste (NSW)	CT2 / TCLP2 Restricted Solid Waste (NSW)
---------------------------------------	--

Field_ID	BH301 / 0.15E	BH305 / 0.4E	BH307 / 0.5E
Location_Code	BH301 / 0.15E	BH305 / 0.4E	BH307 / 0.5E
Sample_Depth_Range			
Sampled_Date_Time	24/07/2019	20/07/2019	18/07/2019
Matrix_Description			

APPENDIX E

Water Quality Testing

E-1 Field record sheet

E-2 Certificates of Analysis

E-3 Summary Table Analytical
Results

E-1 Field record sheet

GROUNDWATER SAMPLING RECORD FORM
LOW FLOW PURGING and SAMPLING (incl. low yielding wells)



PROJECT INFORMATION	
WELL ID: BH01	Project Number: 19129302 Client: Site Location: Date: 2/8/19 Sampled By: Time: 16:00

Weather Conditions (Temperature, Precipitation, Wind)

Well Maintenance Required? YES / NO

Detail

WELL INFORMATION	
Diameter of standpipe (mm)	
Standpipe stick up (m)	
Surveyed reference point	
Depth to top of filter pack (from log)	
Depth to bottom of filter pack (from log)	
Depth of well (from log)	

mbRP - metres below top of reference point
 Hose volume - 0.12 L/m of 1/2 inch diameter hose
 Hose volume - 0.07 L/m of 3/8 inch diameter hose
 Hose volume - 0.03 L/m of 1/4 inch diameter hose

GAUGING INFORMATION			
Pre-Sampling Information		Purging and Sampling Information	
Interface probe used?	YES / NO	Depth of pump intake (mbRP)	
Initial depth to water (mbRP)	5.42	Length of hose (m)	
Depth to product (mbRP)		Volume in hose (L)	
Thickness of product (m)		Depth to water after placement of pump (mbRP)	
Bailed product thickness (m)		Depth to water at end of purging (mbRP)	
Total depth of well (mbRP)		Depth to water after collection of samples (mbRP)	
Thickness of sediment on base of well (m)		Purging and Sampling Method	

Controller settings	
CPM	
Refill	
Discharge	
Throttle	

WQM Model

WQM Calibration Certificate

GROUNDWATER MONITORING WELL PURGING RECORD									
Time	Cumulative Volume Purged (L)	Flow Rate (L/min)	Depth to Water (mbRP)	±0.1	±5%	±10	±10%	±0.5°C	Appearance (Colour, Turbidity, Odour, etc)
				pH	Conductivity (µS/cm)	Redox (mV)	Dissolved Oxygen (ppm)	Temperature (°C)	
11:07	0.2	0.8	5.48	7.69	1903	38.4	1.83	17.4	Clear
11:13	0.4		5.64	7.67	1757	47.6	0.77	18.3	"
11:17	0.6		5.74	7.59	1522	58.3	0.88	18.3	"
11:20	0.8		5.87	7.55	1443	67.1	3.61	18.3	"
1:40	1.0		5.48	7.59	1585	70.2	4.86	18.2	Clear
1:50	1.3		5.60	7.53	1490	-91.4	4.76	18.6	

SAMPLING RECORD		
Time Sampled: 2:00pm Colour: Clear Odour: Turbidity: ☒ Low ☐ Medium ☐ High Hydrocarbon Sheen? ☐ Yes ☒ No DI Water Lab Certificate No. Notes: No logger	Sample IDs Primary Duplicate: Secondary Duplicate: Trip Blank: Rinsate: Field Blank:	Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved) Vials (P/UP) 1L Amber 1L Plastic Phenols/COD/NH3 (F/UF; P/UP) Ferrous/Ferric Iron (F/UF; P/UP) Metals (F/UF; P/UP) Cyanide Sulphide Other Other

GROUNDWATER SAMPLING RECORD FORM
LOW FLOW PURGING and SAMPLING (incl. low yielding wells)



PROJECT INFORMATION

WELL ID: BH306 Project Number: 19125312 Date: 2/8/19
Client: SH Sampled By: SH
Site Location: Liverpool Time: 8:30

Weather Conditions (Temperature, Precipitation, Wind)

Well Maintenance Required? YES / NO

Detail

Screen = 9 x 12m

GAUGING INFORMATION

Pre-Sampling Information		Purging and Sampling Information	
Interface probe used?	YES / NO	Depth of pump intake (mbRP)	
Initial depth to water (mbRP)	<u>7.71</u>	Length of hose (m)	
Depth to product (mbRP)		Volume in hose (L)	
Thickness of product (m)		Depth to water after placement of pump (mbRP)	
Bailed product thickness (m)		Depth to water at end of purging (mbRP)	
Total depth of well (mbRP)		Depth to water after collection of samples (mbRP)	
Thickness of sediment on base of well (m)		Purging and Sampling Method	

WELL INFORMATION	
Diameter of standpipe (mm)	
Standpipe stick up (m)	
Surveyed reference point	
Depth to top of filter pack (from log)	
Depth to bottom of filter pack (from log)	
Depth of well (from log)	

mbRP - metres below top of reference point
Hose volume - 0.12 L/m of 1/2 inch diameter hose
Hose volume - 0.07 L/m of 3/8 inch diameter hose
Hose volume - 0.03 L/m of 1/4 inch diameter hose

Controller settings	
CPM	
Refill	
Discharge	
Throttle	

WQM Model

WQM Calibration Certificate

GROUNDWATER MONITORING WELL PURGING RECORD										Appearance (Colour, Turbidity, Odour, etc)
Time	Cumulative Volume Purged (L)	Flow Rate (L/min)	Depth to Water (mbRP)	±0.1	±5%	±10	±10%	±0.5°C		
				pH	Conductivity (µS/cm)	Redox (mV)	Dissolved Oxygen (ppm)	Temperature (°C)		
9:05	0.5		8.10	7.82	2806	88.1	1.18	16.5	Clear	
9:10	0.7		8.39	7.70	2832	90.0	0.75	16.6		
9:15	0.9		8.62	7.60	2838	84.4	0.45	16.9		
2:30	1.1		7.45	7.48	2786	23.3	0.99	19.5	Clear	
2:35	1.3		7.68	7.48	2803	17.1	0.60	19.9	Test in Sun	
2:40	1.5		7.82	7.49	2801	13.2	0.50	20.1	↓	
					</					

Time Sampled: 2:50
Colour: Clear
Odour: -
Turbidity: Low Medium High
Hydrocarbon Sheen? Yes No
DI Water Lab Certificate No.
Notes:

SAMPLE IDS

Primary Duplicate:
Secondary Duplicate:
Trip Blank:
Rinsate:
Field Blank:

SAMPLE CONTAINERS/PRESERVATION (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

Vials (P/UP) Metals (F/UF; P/UP)
1L Amber Cyanide
1L Plastic Sulphide
Phenols/COD/NH3 (F/UF; P/UP) Other
Ferrous/Ferric Iron (F/UF; P/UP) Other

5+ bottles

LOW FLOW PURGING and SAMPLING (incl. low yielding wells)



WELL ID: BH02		PROJECT INFORMATION Project Number: 19125312 Client: Site Location: Liverpool		Date: 2/8/19 Sampled By: SH Time: 10:10	
---------------	--	--	--	---	--

Well Maintenance Required? YES / NO

Detail

Given = 2m $\rightarrow$ 14m

WELL INFORMATION	
Diameter of standpipe (mm)	
Standpipe stick up (m)	
Surveyed reference point	
Depth to top of filter pack (from log)	
Depth to bottom of filter pack (from log)	
Depth of well (from log)	

Hose volume = 0.03 L/m of 1/4 inch diameter hose

GAUGING INFORMATION			
Pre-Sampling Information		Purging and Sampling Information	
Interface probe used?	YES / NO	Depth of pump intake (mbRP)	
Initial depth to water (mbRP)	6.28	Length of hose (m)	
Depth to product (mbRP)		Volume in hose (L)	
Thickness of product (m)		Depth to water after placement of pump (mbRP)	
Bailed product thickness (m)		Depth to water at end of purging (mbRP)	
Total depth of well (mbRP)		Depth to water after collection of samples (mbRP)	
Thickness of sediment on base of well (m)		Purging and Sampling Method	

Controller settings	
CPM	
Refill	
Discharge	
Throttle	

WQM Calibration Certificate

[illegible]

SAMPLING RECORD			
Time Sampled:	3:29	Sample IDs Primary Duplicate: _____ Secondary Duplicate: _____ Trip Blank: _____ Rinsate: _____ Field Blank: _____	Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)
Colour:	Clear		Vials (P/UP) _____ Metals (F/UF;P/UP) _____ 1L Amber _____ Cyanide _____ 1L Plastic _____ Sulphide _____ Phenols/COD/NH3 (F/UF; P/UP) _____ Other _____ Ferrous/Ferric Iron (F/UF; P/UP) _____ Other _____
Odour:	—		
Turbidity:	Low Medium High		
Hydrocarbon Sheen ?	Yes No		
DI Water Lab Certificate No.			
Notes:			

GROUNDWATER SAMPLING RECORD FORM
LOW FLOW PURGING and SAMPLING (incl. low yielding wells)



PROJECT INFORMATION	
WELL ID: BH304	Project Number: 19125312 Client: Site Location: Live Pool Date: 2/8/19 Sampled By: SH Time: 12:00

Weather Conditions (Temperature, Precipitation, Wind) _____

Well Maintenance Required? YES / NO

Detail _____

WELL INFORMATION	
Diameter of standpipe (mm)	
Standpipe stick up (m)	
Surveyed reference point	
Depth to top of filter pack (from log)	
Depth to bottom of filter pack (from log)	
Depth of well (from log)	

mbRP - metres below top of reference point
 Hose volume - 0.12 L/m of 1/2 inch diameter hose
 Hose volume - 0.07 L/m of 3/8 inch diameter hose
 Hose volume - 0.03 L/m of 1/4 inch diameter hose

GAUGING INFORMATION			
Pre-Sampling Information		Purging and Sampling Information	
Interface probe used?	YES / NO	Depth of pump Intake (mbRP)	
Initial depth to water (mbRP)	9.25	Length of hose (m)	
Depth to product (mbRP)		Volume in hose (L)	
Thickness of product (m)		Depth to water after placement of pump (mbRP)	
Bailed product thickness (m)		Depth to water at end of purging (mbRP)	
Total depth of well (mbRP)		Depth to water after collection of samples (mbRP)	
Thickness of sediment on base of well (m)		Purging and Sampling Method	

Controller settings	
CPM	
Refill	
Discharge	
Throttle	

WQM Model

Airnet

WQM Calibration Certificate _____

GROUNDWATER MONITORING WELL PURGING RECORD									
Time	Cumulative Volume Purged (L)	Flow Rate (L/min)	Depth to Water (mbRP)	±0.1	±5%	±10	±10%	±0.5°C	Appearance (Colour, Turbidity, Odour, etc)
				pH	Conductivity (µS/cm)	Redox (mV)	Dissolved Oxygen (ppm)	Temperature (°C)	
12:14	0.2		9.28	7.52	2062	-190.5	1.84	17.0	Light Grey
12:18	0.5		7.27	7.54	1966	-202.4	1.03	18.2	"
12:25	0.8		7.28	7.58	1982	-200	1.13	18.0	"
12:30	1.2		9.28	7.58	1964	-204.5	0.80	18.3	"
12:36	1.5		9.28	7.62	1968	-197.0	1.32	18.7	"
12:40	1.8		9.28	7.62	1963	-200	0.78	18.8	"

SAMPLING RECORD		
Time Sampled: 12:45 Colour: Light Grey Odour: - Turbidity: Low Medium High Hydrocarbon Sheen? Yes No DI Water Lab Certificate No. _____ Notes: _____	Sample IDs Primary Duplicate: _____ Secondary Duplicate: _____ Trip Blank: _____ Rinsate: _____ Field Blank: _____	Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved) Vials (P/UP) _____ 1L Amber _____ 1L Plastic _____ Phenols/COD/NH3 (FAUF; P/UP) _____ Ferrous/Ferric Iron (FAUF; P/UP) _____ Metals (FAUF; P/UP) _____ Cyanide _____ Sulphide _____ Other _____ Other _____

5 x bottles.

APPENDIX E

E-2 Certificates of Analysis

CERTIFICATE OF ANALYSIS

Work Order : **ES1924476**
Client : **GOLDER ASSOCIATES**
Contact : **BERNIE FRANCIS**
Address : **LEVEL 1, 124 PACIFIC HIGHWAY**
ST LEONARDS NSW, AUSTRALIA 2065
Telephone : **+61 08 8213 2100**
Project : **19125312**
Order number :
C-O-C number :
Sampler :
Site : **Liverpool Civic Place**
Quote number : **EN/002/18 National BQ**
No. of samples received : **6**
No. of samples analysed : **6**

Page : 1 of 9
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 02-Aug-2019 16:40
Date Analysis Commenced : 02-Aug-2019
Issue Date : 08-Aug-2019 17:34



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
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, 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.

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.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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.
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				BH304	BH306	BH1	BH2	Trip Spike
Client sampling date / time				02-Aug-2019 00:00	02-Aug-2019 00:00	02-Aug-2019 00:00	02-Aug-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924476-001	ES1924476-002	ES1924476-003	ES1924476-004	ES1924476-005
				Result	Result	Result	Result	Result
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	39	23	20	22	----
Total Alkalinity as CaCO3	----	1	mg/L	39	23	20	22	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	33	215	171	327	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	310	307	172	607	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	10	18	8	24	----
Magnesium	7439-95-4	1	mg/L	16	25	15	51	----
Sodium	7440-23-5	1	mg/L	440	617	293	905	----
Potassium	7440-09-7	1	mg/L	8	9	3	9	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.06	0.02	<0.01	<0.01	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.003	<0.001	0.004	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	0.003	----
Nickel	7440-02-0	0.001	mg/L	0.006	0.007	<0.001	0.005	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L	<0.005	0.041	<0.005	<0.005	----
Manganese	7439-96-5	0.001	mg/L	0.992	0.179	0.006	0.038	----
Iron	7439-89-6	0.05	mg/L	0.24	<0.05	<0.05	<0.05	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				BH304	BH306	BH1	BH2	Trip Spike
Client sampling date / time				02-Aug-2019 00:00	02-Aug-2019 00:00	02-Aug-2019 00:00	02-Aug-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924476-001	ES1924476-002	ES1924476-003	ES1924476-004	ES1924476-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L	480	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L	1010	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	1490	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L	910	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L	630	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	1540	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	910	<100	<100	<100	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	3	<1	<1	<1	16
Toluene	108-88-3	2	µg/L	6	<2	<2	<2	16
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	16
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	16
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	17



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				BH304	BH306	BH1	BH2	Trip Spike
Client sampling date / time				02-Aug-2019 00:00	02-Aug-2019 00:00	02-Aug-2019 00:00	02-Aug-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924476-001	ES1924476-002	ES1924476-003	ES1924476-004	ES1924476-005
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	33
^ Sum of BTEX	----	1	µg/L	9	<1	<1	<1	81
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	18
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	0.49	----	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	0.52	----	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	3.02	----	<0.02	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	0.04	----	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	0.28	----	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	----	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	----	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	0.20	----	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	0.42	----	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	0.08	----	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	0.08	----	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	0.04	----	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluorotridecanoic acid (PFTriDA)	72629-94-8	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	----	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	----	<0.02	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				BH304	BH306	BH1	BH2	Trip Spike
Client sampling date / time				02-Aug-2019 00:00	02-Aug-2019 00:00	02-Aug-2019 00:00	02-Aug-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924476-001	ES1924476-002	ES1924476-003	ES1924476-004	ES1924476-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	----	<0.05	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	<0.05	----	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	----	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	----	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	----	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	----	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	----	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	----	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	----	5.17	----	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	3.30	----	<0.01	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	4.57	----	<0.01	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	26.2	21.9	16.9	24.3	----
2-Chlorophenol-D4	93951-73-6	1.0	%	60.4	51.3	40.1	58.3	----
2,4,6-Tribromophenol	118-79-6	1.0	%	58.0	50.8	64.0	47.8	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	94.3	85.6	61.1	87.4	----
Anthracene-d10	1719-06-8	1.0	%	94.1	85.9	77.6	93.6	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				BH304	BH306	BH1	BH2	Trip Spike
Client sampling date / time				02-Aug-2019 00:00	02-Aug-2019 00:00	02-Aug-2019 00:00	02-Aug-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1924476-001	ES1924476-002	ES1924476-003	ES1924476-004	ES1924476-005
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
4-Terphenyl-d14	1718-51-0	1.0	%	94.7	95.5	91.1	101	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	92.6	88.8	101	88.8	95.6
Toluene-D8	2037-26-5	2	%	106	99.4	107	101	104
4-Bromofluorobenzene	460-00-4	2	%	108	99.2	104	100	103
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	----	115	----	114	----
13C8-PFOA	----	0.02	%	----	95.0	----	97.2	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Trip Blank	----	----	----	----
Client sampling date / time				31-Jul-2019 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1924476-006	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	----
^ Total Xylenes	----	2	µg/L	<2	----	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	100	----	----	----	----	----
Toluene-D8	2037-26-5	2	%	97.6	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	94.3	----	----	----	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: ES1924476	Page	: 1 of 11
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Sydney
Contact	: BERNIE FRANCIS	Contact	: Customer Services ES
Address	: LEVEL 1, 124 PACIFIC HIGHWAY ST LEONARDS NSW, AUSTRALIA 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 08 8213 2100	Telephone	: +61-2-8784 8555
Project	: 19125312	Date Samples Received	: 02-Aug-2019
Order number	: ---	Date Analysis Commenced	: 02-Aug-2019
C-O-C number	: ---	Issue Date	: 08-Aug-2019
Sampler	: ---		
Site	: Liverpool Civic Place		
Quote number	: EN/002/18 National BQ		
No. of samples received	: 6		
No. of samples analysed	: 6		



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, 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: **WATER**

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: 2506829)									
ES1924456-007	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	62	63	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	62	63	0.00	0% - 20%
ES1924496-014	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	14	14	0.00	0% - 50%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	14	14	0.00	0% - 50%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2504744)									
ES1924439-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	802	768	4.28	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2505116)									
ES1924403-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	33	38	15.7	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 2504745)									
ES1924476-002	BH306	ED045G: Chloride	16887-00-6	1	mg/L	307	310	0.990	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 2505115)									
ME1900978-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	73	70	4.20	0% - 20%
ES1924305-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	15	14	0.00	0% - 50%
ED093F: Dissolved Major Cations (QC Lot: 2505444)									
ES1924413-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	13	13	0.00	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	10	10	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	32	31	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.00	No Limit
ES1924338-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	94	99	4.88	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	35	37	7.16	0% - 20%



Sub-Matrix: **WATER**

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 (%)
ED093F: Dissolved Major Cations (QC Lot: 2505444) - continued									
ES1924338-001	Anonymous	ED093F: Sodium	7440-23-5	1	mg/L	5	6	0.00	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	1	1	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2505445)									
ES1924413-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		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: Manganese	7439-96-5	0.001	mg/L	0.604	0.610	1.01	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.007	0.006	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	2.47	2.50	0.938	0% - 20%
		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	3.90	4.03	3.15	0% - 20%
ES1924338-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		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: Manganese	7439-96-5	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	<0.05	<0.05	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2505447)									
ES1924476-004	BH2	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.004	0.004	0.00	No Limit
		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	0.003	0.003	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.038	0.036	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.005	0.005	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	<0.05	<0.05	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 2505443)									
ES1924429-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1924338-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 2506827)									
ES1924456-003	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	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 (%)
EK040P: Fluoride by PC Titrator (QC Lot: 2506827) - continued									
ES1924338-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 2506831)									
ES1924506-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2506938)									
ES1924413-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES1924476-004	BH2	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2506938)									
ES1924413-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES1924476-004	BH2	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2506938)									
ES1924413-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	3	3	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
ES1924476-004	BH2	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2507624)									
EP1907593-001	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2507624)									
EP1907593-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit

Page : 5 of 11
 Work Order : ES1924476
 Client : GOLDER ASSOCIATES
 Project : 19125312



Sub-Matrix: **WATER**

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 (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2507624) - continued									
EP1907593-001	Anonymous	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2507624)									
EP1907593-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2507624)									
EP1907593-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 2507624)									
EP1907593-001	Anonymous	EP231X: Sum of PFAS	----	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 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**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
ED037P: Alkalinity by PC Titrator (QCLot: 2506829)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	85.0	81	111
				----	50 mg/L	93.9	70	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2504744)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	108	82	122
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2505116)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	99.9	82	122
ED045G: Chloride by Discrete Analyser (QCLot: 2504745)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	101	81	127
				<1	1000 mg/L	98.1	81	127
ED045G: Chloride by Discrete Analyser (QCLot: 2505115)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	106	81	127
				<1	1000 mg/L	94.8	81	127
ED093F: Dissolved Major Cations (QCLot: 2505444)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	96.8	80	114
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	98.2	90	116
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	98.9	82	120
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	96.0	85	113
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505445)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	92.6	80	116
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.7	85	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.5	84	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.4	85	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.4	81	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.2	83	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	91.4	82	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.0	82	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	92.8	81	117
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	90.9	82	112
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505447)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	88.8	80	116
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.7	85	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.8	84	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	87.1	85	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	85.2	81	111



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505447) - continued								
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.9	83	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	89.6	82	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	83.9	82	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.8	81	117
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	87.6	82	112
EG035F: Dissolved Mercury by FIMS (QCLot: 2505443)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.9	83	105
EK040P: Fluoride by PC Titrator (QCLot: 2506827)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	105	82	116
EK040P: Fluoride by PC Titrator (QCLot: 2506831)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	100	82	116
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2505004)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	74.1	50	94
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	69.7	64	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	72.4	62	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	71.8	64	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	79.1	63	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	76.5	64	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	82.3	64	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	84.0	63	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	67.6	64	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	74.2	63	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	72.4	62	119
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	76.4	63	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	71.7	63	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	67.3	60	118
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	69.6	61	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	81.6	59	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2505005)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	93.8	56	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	78.5	72	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	63.3	56	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2506938)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	95.0	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2505005)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	64.0	58	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	84.5	63	110



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2505005) - continued								
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	102	62	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2506938)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	97.1	75	127
EP080: BTEXN (QCLot: 2506938)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	93.2	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	104	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	108	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	108	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	111	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	110	70	120
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2507624)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	97.4	70	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	111	70	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	112	70	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	106	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	90.0	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	99.2	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2507624)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	79.6	70	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	119	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	93.2	70	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	98.2	70	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	97.4	70	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	107	70	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	112	70	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	108	70	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	93.0	70	130
EP231X: Perfluorotridecanoic acid (PFTriDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	106	70	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	117	70	150
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2507624)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	76.6	70	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	113	70	150
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	120	70	150
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	1.25 µg/L	103	70	150
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	116	70	150



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2507624) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	116	70	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	117	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2507624)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	108	70	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	111	70	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	106	70	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	118	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.

Sub-Matrix: **WATER**

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: 2504744)							
ES1924439-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2505116)							
ES1924403-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	72.8	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 2504745)							
ES1924476-002	BH306	ED045G: Chloride	16887-00-6	250 mg/L	95.5	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 2505115)							
ES1924305-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	108	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505445)							
ES1924344-006	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	101	70	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	92.8	70	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	91.8	70	130
		EG020A-F: Copper	7440-50-8	1 mg/L	88.4	70	130
		EG020A-F: Lead	7439-92-1	1 mg/L	103	70	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	85.6	70	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	92.5	70	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	92.4	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505447)							
ES1924506-001	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	97.2	70	130

Page : 10 of 11
 Work Order : ES1924476
 Client : GOLDER ASSOCIATES
 Project : 19125312



Sub-Matrix: **WATER**

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
EG020F: Dissolved Metals by ICP-MS (QCLot: 2505447) - continued							
ES1924506-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.25 mg/L	98.0	70	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	94.2	70	130
		EG020A-F: Copper	7440-50-8	1 mg/L	92.0	70	130
		EG020A-F: Lead	7439-92-1	1 mg/L	93.0	70	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	93.1	70	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	94.0	70	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	98.5	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 2505443)							
ES1924191-003	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	85.7	70	130
EK040P: Fluoride by PC Titrator (QCLot: 2506827)							
ES1924338-002	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	100	70	130
EK040P: Fluoride by PC Titrator (QCLot: 2506831)							
ES1924506-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	88.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2506938)							
ES1924413-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	105	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2506938)							
ES1924413-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	103	70	130
EP080: BTEXN (QCLot: 2506938)							
ES1924413-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	94.2	70	130
		EP080: Toluene	108-88-3	25 µg/L	102	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	106	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	106	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	108	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	102	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2507624)							
EP1907593-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	98.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	110	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	117	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	97.8	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	90.2	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	97.6	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2507624)							
EP1907593-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	117	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	104	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	99.8	50	130



Sub-Matrix: **WATER**

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: 2507624) - continued							
EP1907593-001	Anonymous	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	96.8	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	109	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	110	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	107	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	116	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	94.2	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.5 µg/L	91.0	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	106	50	150
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2507624)							
EP1907593-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	75.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	111	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	121	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	1.25 µg/L	119	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	122	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	120	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	106	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2507624)							
EP1907593-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	109	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	102	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	105	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	120	50	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES1924476	Page	: 1 of 8
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Sydney
Contact	: BERNIE FRANCIS	Telephone	: +61-2-8784 8555
Project	: 19125312	Date Samples Received	: 02-Aug-2019
Site	: Liverpool Civic Place	Issue Date	: 08-Aug-2019
Sampler	: ----	No. of samples received	: 6
Order number	:	No. of samples analysed	: 6

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

- **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.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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	ES1924439--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.

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	8	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	8	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED037P: Alkalinity by PC Titrator							
HDPE (no PTFE) (ED037-P) BH304, BH1, BH306, BH2	02-Aug-2019	----	----	----	05-Aug-2019	16-Aug-2019	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
HDPE (no PTFE) (ED041G) BH306	02-Aug-2019	----	----	----	02-Aug-2019	30-Aug-2019	✓
HDPE (no PTFE) (ED041G) BH304, BH2, BH1,	02-Aug-2019	----	----	----	03-Aug-2019	30-Aug-2019	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED045G: Chloride by Discrete Analyser								
HDPE (no PTFE) (ED045G) BH306		02-Aug-2019	----	----	----	02-Aug-2019	30-Aug-2019	✓
HDPE (no PTFE) (ED045G) BH304, BH2	BH1,	02-Aug-2019	----	----	----	03-Aug-2019	30-Aug-2019	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) BH304, BH1,	BH306, BH2	02-Aug-2019	----	----	----	05-Aug-2019	30-Aug-2019	✓
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) BH304, BH1,	BH306, BH2	02-Aug-2019	----	----	----	05-Aug-2019	29-Jan-2020	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) BH304, BH1,	BH306, BH2	02-Aug-2019	----	----	----	05-Aug-2019	30-Aug-2019	✓
EK040P: Fluoride by PC Titrator								
HDPE (no PTFE) (EK040P) BH304, BH1,	BH306, BH2	02-Aug-2019	----	----	----	05-Aug-2019	30-Aug-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BH304, BH1,	BH306, BH2	02-Aug-2019	03-Aug-2019	09-Aug-2019	✓	07-Aug-2019	12-Sep-2019	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) BH304, BH1,	BH306, BH2	02-Aug-2019	03-Aug-2019	09-Aug-2019	✓	07-Aug-2019	12-Sep-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) BH304, BH1,	BH306, BH2	02-Aug-2019	07-Aug-2019	16-Aug-2019	✓	07-Aug-2019	16-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) Trip Blank		31-Jul-2019	07-Aug-2019	14-Aug-2019	✓	07-Aug-2019	14-Aug-2019	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
BH304, BH1,	BH306, BH2	02-Aug-2019	03-Aug-2019	09-Aug-2019	✓	07-Aug-2019	12-Sep-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
BH304, BH1,	BH306, BH2	02-Aug-2019	07-Aug-2019	16-Aug-2019	✓	07-Aug-2019	16-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
Trip Blank		31-Jul-2019	07-Aug-2019	14-Aug-2019	✓	07-Aug-2019	14-Aug-2019	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
BH304, BH1,	BH306, BH2	02-Aug-2019	07-Aug-2019	16-Aug-2019	✓	07-Aug-2019	16-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
Trip Spike		30-Jul-2019	07-Aug-2019	13-Aug-2019	✓	07-Aug-2019	13-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
Trip Blank		31-Jul-2019	07-Aug-2019	14-Aug-2019	✓	07-Aug-2019	14-Aug-2019	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
BH306,	BH2	02-Aug-2019	06-Aug-2019	29-Jan-2020	✓	06-Aug-2019	29-Jan-2020	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
BH306,	BH2	02-Aug-2019	06-Aug-2019	29-Jan-2020	✓	06-Aug-2019	29-Jan-2020	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
BH306,	BH2	02-Aug-2019	06-Aug-2019	29-Jan-2020	✓	06-Aug-2019	29-Jan-2020	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
BH306,	BH2	02-Aug-2019	06-Aug-2019	29-Jan-2020	✓	06-Aug-2019	29-Jan-2020	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
BH306,	BH2	02-Aug-2019	06-Aug-2019	29-Jan-2020	✓	06-Aug-2019	29-Jan-2020	✓



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)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	3	11	27.27	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	19	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	4	11	36.36	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	2	11	18.18	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	2	11	18.18	5.00	✓	NEPM 2013 B3 & ALS QC Standard



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	
Matrix Spikes (MS) - Continued							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	19	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	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)
Sulfate (Turbidimetric) as SO ₄ 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO ₄ . 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 BaSO ₄ suspension is measured by a photometer and the SO ₄ -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 liberated thiocyanate forms highly-coloured ferric thiocyanate 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 (SnCl ₂)(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 SnCl ₂ 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)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO ₄ DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1

Preparation Methods	Method	Matrix	Method Descriptions
Preparation for PFAS in water.	EP231-PR	WATER	Method presumes direct injection without workup. Preparation includes addition of internal standard and surrogate, and filtration prior to analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Grace White

From: Grace White
Sent: Monday, 5 August 2019 3:52 PM
To: Loren Schiavon
Cc: Helen Simpson
Subject: ES1924476 - Add PFAS

Hi Loren,

As per a client request, can you please arrange adding PFAS EP231X to samples 002 and 004? Can cancel the Cations/Anions coming from this bottle if need be.

Thank you!

Grace White
Client Services Officer, Environmental
Sydney



T +61 2 8784 8555 **D** +61 2 8784 8531
F +61 2 8784 8500
grace.white@alsglobal.com
277-289 Woodpark Road
Smithfield, NSW, 2164

★Subscribe    

We are keen for your feedback! [Please click here for your 3 minute survey](#)

EnviroMail™ 00 – All EnviroMails™ in one convenient library.

Recent releases (click to access directly):

EnviroMail™ 124 – PFOS Analysis to Freshwater Species Protection Lvl 99%



See how ALS is making sampling easier! [Register](#) your interest.

Right Solutions · Right Partner
www.alsglobal.com

Environmental Division
Sydney
Work Order Reference
ES1924476



Telephone : + 61-2-8784 8555

E-3 Summary Table Analytical

				Field_ID				BH1	BH2	BH304	BH306
				Location_Code				BH1	BH2	BH304	BH306
				Well							
				Sampled_Date_Time				02-08-19	02-08-19	02-08-19	02-08-19
				95% Protection of species (Marine)	NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay >8m	NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay 4-8m	NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Clay >8m	NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Clay 4-8m			
Analytes	ChemName	output unit	EQL	ANZG 2018	NEPM 2013	NEPM 2013	NEPM 2013	NEPM 2013			
Major Ions											
	Bicarbonate Alkalinity (as CaCO3)	mg/L	1						20	22	39
	Carbonate Alkalinity (as CaCO3)	mg/L	1						<1	<1	<1
	Hydroxide Alkalinity (as CaCO3)	mg/L	1						<1	<1	<1
	Total Alkalinity (as CaCO3)	mg/L	1						20	22	39
	Chloride	mg/L	1						172	607	310
	Fluoride	mg/L	0.1						<0.1	<0.1	<0.1
	Sulphate (as SO4) (Filtered)	mg/L	1						171	327	33
	Sodium (Filtered)	mg/L	1						293	905	440
	Potassium (Filtered)	mg/L	1						3	9	8
	Calcium (Filtered)	mg/L	1						8	24	10
	Magnesium (Filtered)	mg/L	1						15	51	16
Dissolved Metals											
	Aluminium (Filtered)	µg/L	10						<10	<10	60
	Iron (Filtered)	mg/L	0.05						<0.05	<0.05	0.24
	Manganese (Filtered)	µg/L	1	1900 ¹					6	38	992
	Arsenic (Filtered)	µg/L	1	24 ^{1,2} / 13 ^{1,2}					<1	4	<1
	Cadmium (Filtered)	µg/L	0.1	5.5					<0.1	<0.1	<0.1
	Chromium (Filtered)	µg/L	1						<1	<1	<1
	Copper (Filtered)	µg/L	1	1.3					<1	3	<1
	Lead (Filtered)	µg/L	1	4.4 ⁴					<1	<1	<1
	Mercury (Filtered)	µg/L	0.1	0.4					<0.1	<0.1	<0.1
	Nickel (Filtered)	µg/L	1	70					<1	5	6
	Zinc (Filtered)	µg/L	5	15					<5	<5	<5
											41
Nutrients											
	Ammonia as N	mg/L	0.01	0.91					<0.01	-	0.03
	Nitrite a N	mg/L	0.01						0.06	-	<0.01
	Nitrate as N	mg/L	0.01	0.7 ¹					4.26	-	<0.01
	Nitrite + Nitrate as N	mg/L	0.01						4.32	-	<0.01
	Total Kjeldahl Nitrogen as N	mg/L	0.1						1.1	-	17.5
	Total Nitrogen as N	mg/L	0.1						5.4	-	17.5
	Total Phosphorus as P	mg/L	0.01						0.04	-	0.48
	Reactive Phosphorus a P	mg/L	0.01						<0.01	-	<0.01
PAH											
	Acenaphthene	µg/L	1						<1	<1	<1
	Acenaphthylene	µg/L	1						<1	<1	<1
	Anthracene	µg/L	1						<1	<1	<1
	Benz(a)anthracene	µg/L	1						<1	<1	<1
	Benzo(a)pyrene	µg/L	0.5						<0.5	<0.5	<0.5
	Benzo(a)pyrene TEQ (lower bound)*	µg/L	0.5						<0.5	<0.5	<0.5
	Benzo(b)&(j)fluoranthene	µg/L	1						<1	<1	<1
	Benzo(g,h,i)perylene	µg/L	1						<1	<1	<1
	Benzo(k)fluoranthene	µg/L	1						<1	<1	<1
	Chrysene	µg/L	1						<1	<1	<1
	Dibenz(a,h)anthracene	µg/L	1						<1	<1	<1
	Fluoranthene	µg/L	1						<1	<1	<1
	Fluorene	µg/L	1						<1	<1	<1
	Indeno(1,2,3-c,d)pyrene	µg/L	1						<1	<1	<1
	Naphthalene	µg/L	1	70	NL	NL	NL	NL	<1	<1	<1
	Phenanthrene	µg/L	1						<1	<1	<1
	Pyrene	µg/L	1						<1	<1	<1
	PAH (Sum of Common 16 PAHs - Lab Reported)	µg/L	0.5						<0.5	<0.5	<0.5
Total Recoverable Hydrocarbons											
Semi-volatile Fraction											
	TRH C10 - C14 Fraction	mg/L	0.05						<0.05	<0.05	0.48
	TRH C15 - C28 Fraction	mg/L	0.1						<0.1	<0.1	1.01
	TRH C29 - C36 Fraction	mg/L	0.05						<0.05	<0.05	<0.05
	TRH+C10 - C36 (Sum of total) (Lab Reported)	mg/L	0.05						<0.05	<0.05	1.49
	TRH >C10 - C16 Fraction F2	mg/L	0.1						<0.1	<0.1	0.91
	TRH >C10 - C16 Fraction Less Naphthalene (F2)	mg/L	0.1		NL	NL	NL	NL	<0.1	<0.1	0.91
	TRH >C16 - C34 Fraction F3	mg/L	0.1						<0.1	<0.1	0.63
	TRH >C34 - C40 Fraction F4	mg/L	0.1						<0.1	<0.1	<0.1
	TRH+C10 - C40 (Sum of total) (Lab Reported)	mg/L	0.1						<0.1	<0.1	1.54
Volatile Fraction											
	TRH C6 - C9 Fraction	mg/L	0.02						<0.02	<0.02	<0.02
	TRH C6 - C10 Fraction F1	mg/L	0.02						<0.02	<0.02	<0.02

									Field_ID	BH1	BH2	BH304	BH306
									Location_Code	BH1	BH2	BH304	BH306
									Well				
									Sampled_Date_Time	02-08-19	02-08-19	02-08-19	02-08-19
				95% Protection of species (Marine)	NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay >8m	NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay 4-8m	NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Clay >8m	NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Clay 4-8m					
Analytes	ChemName	output unit	EQL	ANZG 2018	NEPM 2013	NEPM 2013	NEPM 2013	NEPM 2013					
	TRH C6 - C10 Fraction Less BTEX F1	mg/L	0.02		NL	NL	NL	NL	<0.02	<0.02	<0.02	<0.02	<0.02

								Field_ID	BH1	BH2	BH304	BH306
								Location_Code	BH1	BH2	BH304	BH306
								Well				
								Sampled_Date_Time	02-08-19	02-08-19	02-08-19	02-08-19
				95% Protection of species (Marine)	NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay >8m	NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay 4-8m	NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Clay >8m	NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Clay 4-8m				
Analytes	ChemName	output unit	EQL	ANZG 2018	NEPM 2013	NEPM 2013	NEPM 2013	NEPM 2013				
BTEX												
	Benzene	µg/L	1	700	35000	30000	5000	5000	<1	<1	3	<1
	Toluene	µg/L	2		NL	NL	NL	NL	<2	<2	6	<2
	Ethylbenzene	µg/L	2		NL	NL	NL	NL	<2	<2	<2	<2
	Xylenes (m & p)	µg/L	2						<2	<2	<2	<2
	Xylene (o)	µg/L	2	350 ¹					<2	<2	<2	<2
	Xylenes (Sum of total) (Lab Reported)	µg/L	2		NL	NL	NL	NL	<2	<2	<2	<2
	Total BTEX	µg/L	1						<1	<1	9	<1
	Naphthalene	µg/L	5	70	NL	NL	NL	NL	<5	<5	<5	<5
Per- and polyfluoroalkkyl substances (PFAS)												
	10:2 Fluorotelomer sulfonic acid	µg/L	0.05						-	<0.05	-	<0.05
	4:2 Fluorotelomer sulfonic acid	µg/L	0.05						-	<0.05	-	<0.05
	8:2 Fluorotelomer sulfonate	µg/L	0.05						-	<0.05	-	<0.05
	N-Et-FOSA	µg/L	0.05						-	<0.05	-	<0.05
	N-Et-FOSE	µg/L	0.05						-	<0.05	-	<0.05
	N-Me-FOSA	µg/L	0.05						-	<0.05	-	<0.05
	N-Me-FOSE	µg/L	0.05						-	<0.05	-	<0.05
	Perfluorobutanoic acid (PFBA)	µg/L	0.1						-	<0.1	-	<0.1
	Perfluoroheptane sulfonic acid	µg/L	0.02						-	<0.02	-	0.04
	Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.02						-	<0.02	-	0.2
	Perfluoropentane sulfonic acid	µg/L	0.02						-	<0.02	-	0.52
	PFDCs	µg/L	0.02						-	<0.02	-	<0.02
	N-methyl-perfluorooctanesulfonamidoacetic acid	µg/L	0.02						-	<0.02	-	<0.02
	Sum of PFHxS and PFOS (lab reported)	µg/L	0.01						-	<0.01	-	3.3
	Sum of WA DER PFAS (n=10)	µg/L	0.01						-	<0.01	-	4.57
	Sum of PFASs (n=28)	µg/L	0.01						-	<0.01	-	5.17
	Perfluorobutanesulfonic acid (PFBS)	µg/L	0.02						-	<0.02	-	0.49
	Perfluorodecanoic acid (PFDA)	µg/L	0.02						-	<0.02	-	<0.02
	Perfluorododecanoic acid (PFDoA)	µg/L	0.02						-	<0.02	-	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02						-	<0.02	-	0.08
	Perfluorooctanesulfonic acid (PFOS)	µg/L	0.01	0.13 ⁴					-	<0.01	-	0.28
	Perfluorooctanoate (PFOA)	µg/L	0.01	220 ⁴					-	<0.01	-	0.08
	Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.02						-	<0.02	-	3.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02						-	<0.02	-	0.04
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02						-	<0.02	-	0.42
	6:2 Fluorotelomer Sulfonate (6:2 Fts)	µg/L	0.05						-	<0.05	-	<0.05
	N-ethyl-perfluorooctanesulfonamidoacetic acid	µg/L	0.02						-	<0.02	-	<0.02
	Perfluorooctanesulfonamide (PFOSA)	µg/L	0.02						-	<0.02	-	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05						-	<0.05	-	<0.05
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02						-	<0.02	-	<0.02
	Perfluoroundecanoic acid (PFUnA)	µg/L	0.02						-	<0.02	-	<0.02

1 value for Freshwater
2 as As III in Freshwater
3 as As V
4 as no high reliability value was available a low or unknown reliability value was used from ANZG 2018
5 value taken from PFAS National Environmental Management Plan (NEMP), (HEPA, January 2018)

APPENDIX F

Hydraulic 'Slug' Tests
F-1 Field Record Sheets
F-2 *Aqtesolvtm* Outputs

F-1 Field Record Sheets

SLUG TEST FORM GAP FORM NO. 52



Rising Head Test / Falling Head Test

PROJECT INFORMATION

Project Number / Task: 191025312
 Client: BVILLT
 Site Location: 52 Scott Street Liverpool

Date: 23/2/19
 By: TH

GROUNDWATER WELL DATA

WELL ID: BH1

Information from site:		Information from drillers log	
Well Depth (m)		Screen (from - to)	
Stick-up length (m)		Gravel pack (from - to)	(precise point of reference)
Pipe diameter (m)		Drilled diameter (m)	(precise point of reference)
Initial WL (m TOC)	<u>5.295</u> <u>14:42</u>	Aquifer thickness (from - to)	(m below GL)
Well location (GPS)	E:	Type of formation (clay/sand/...)	
Referential:	N:	Confined / unconfined ?	

SLUG TEST

☒ Rising Head Test
 (removal of water volume - pumping/bailing)

☐ Falling Head Test
 (insertion of air/solid slug)

Volume of slug injected / removed		Initial displacement = initial WL - WL at start of test	
Time (hh:mm:ss) start of test	<u>14:49</u> <u>~5.53</u>	Time (date & hh:mm:ss) end of test	
Manual WL at start of test* (m TOC)		Manual WL at end of test (m TOC)	

*If slug added, maximum water level created by insertion of slug

If slug removed, minimum water level created from removal of slug

Type of data record (select as appropriate)

☒ Manual Time in seconds or minutes (or real time)

	<u>14:56</u> <u>26min</u>								
Time (t)	<u>7 min</u> <u>15:15</u>								
Depth to Water (m TOC)	<u>5.53</u> <u>5.49</u>								

If logger used, manual data SHOULD be taken to validate logger data

☒ Data Logger

Type: Seametrics
 Rated Depth Range (m head):

Logger name/Serial NO: _____

Installation Depth / WL reading before start of test (m TOC) (precise): _____

File/ test name: _____

Data downloaded and checked: YES / NO

If Yes, Name of exported file: _____

☐ Vented
☒ Unvented
☐ Barologger used

OBSERVATIONS

Weather Conditions:

Temperature:

Precipitation:

Wind:

Moon (Tide):

☐ Still ☐ Light Strong ☐ Gusty

☐ high tide: _____ ☐ low tide: _____

Notes: _____

I leave logger to measure recovery overnight.

SLUG TEST FORM GAP FORM NO. 52



Rising Head Test / Falling Head Test

PROJECT INFORMATION

Project Number / Task: 19125312 LIVERPOOL CIVIC PLACE
 Client: ISU 115
 Site Location: 52 Scott Street Liverpool

Date: 24/7/19
 By: Tm

GROUNDWATER WELL DATA

WELL ID: BH2

Information from site:		Information from drillers log	
Well Depth (m)		Screen (from - to)	
Stick-up length (m)		Gravel pack (from - to)	(precise point of reference)
Pipe diameter (m)		Drilled diameter (m)	(precise point of reference)
Initial WL (m TOC)	<u>5.39 at 8:59</u>	Aquifer thickness (from - to)	(m below GL)
Well location (GPS)	E:	Type of formation (clay/sand/...)	
Referential:	N:	Confined / unconfined ?	

SLUG TEST

☒ Rising Head Test
 (removal of water volume - pumping/bailing)

☐ Falling Head Test
 (insertion of air/solid slug)

Volume of slug injected / removed		Initial displacement = initial WL - WL at start of test	
Time (hh:mm:ss) start of test	<u>15:32</u>	Time (date & hh:mm:ss) end of test	
Manual WL at start of test* (m TOC)	<u>9.18</u>	Manual WL at end of test (m TOC)	

*If slug added, maximum water level created by insertion of slug
 If slug removed, minimum water level created from removal of slug

Type of data record (select as appropriate)

☐ Manual

Time in seconds or minutes (or real time)

	1	2	3	4	5	6	7	8	10
Time (t)									
Depth to Water (m TOC)									

If logger used, manual data SHOULD be taken to validate logger data

☒ Data Logger

Type: Seametrics

Logger name/Serial NO: _____

Rated Depth Range (m head): _____

Installation Depth / WL reading before start of test (m TOC) (precise): _____

File/ test name: _____

Data downloaded and checked: _____

YES / NO

If Yes, Name of exported file: _____

☐ Vented
☐ Unvented
☐ Barologger used

OBSERVATIONS

Weather Conditions:

Temperature: _____

Precipitation: _____

Wind: _____

Moon (Tide): _____

☐ Still ☐ Light Strong ☐ Gusty
☐ high tide: _____ ☐ low tide: _____

Notes: _____

As Slug test from 23/7/19 did not recover to initial level
 I removed water with Watere foot valve and tubing (~154)
 to generate a significant drawdown and measure
 the recovery
 Recovery is measured with logger only

SLUG TEST FORM GAP FORM NO. 52



Rising Head Test / Falling Head Test

PROJECT INFORMATION

Project Number / Task: 19125312, LIVERPOOL CIVIC PLACE
 Client: BUILT
 Site Location: 52 Scott Street Liverpool

Date: 23/7/19
 By: TM

GROUNDWATER WELL DATA

WELL ID: BH2

Information from site:		Information from drillers log	
Well Depth (m)		Screen (from - to)	
Stick-up length (m)		Gravel pack (from - to)	(precise point of reference)
Pipe diameter (m)		Drilled diameter (m)	(precise point of reference)
Initial WL (m TOC)	<u>5.245</u>	Aquifer thickness (from - to)	(m below GL)
Well location (GPS)	E: <u></u>	Type of formation (clay/sand/...)	
Referential:	N: <u></u>	Confined / unconfined ?	

→ Water level (after placing logger):

SLUG TEST

☒ Rising Head Test
 (removal of water volume - pumping/bailing)

☐ Falling Head Test
 (insertion of air/solid slug)

Volume of slug injected/removed	<u>1L</u>	<u>1 bailer</u>	Initial displacement = initial WL - WL at start of test		
Time (hh:mm:ss) start of test	<u>23/7/19</u>	<u>13:37</u>	Time (date & hh:mm:ss) end of test		
Manual WL at start of test* (m TOC)			Manual WL at end of test (m TOC)		

*If slug added, maximum water level created by insertion of slug

If slug removed, minimum water level created from removal of slug

Type of data record (select as appropriate)

☐ Manual

Time in seconds or minutes (or real time)

	1	2	3	4	5	6	7	8	10
Time (t)	<u>13:41</u>	<u>14:21</u>	<u>15:09</u>						
Depth to Water (m TOC)	<u>~5.4</u>	<u>5.41</u>	<u>5.41</u>						

If logger used, manual data SHOULD be taken to validate logger data

☒ Data Logger

Type: Seametrics

Logger name/Serial NO: _____

Rated Depth Range (m head): _____

Installation Depth / WL reading before start of test (m TOC) (precise): _____

File/ test name: _____

Data downloaded and checked: _____ YES / NO

If Yes, Name of exported file: _____

☐ Vented
☐ Unvented
☐ Barologger used

OBSERVATIONS

Weather Conditions:

Temperature: _____

Precipitation: _____

Wind: _____

Moon (Tide): _____

☐ Still

☐ Light

Strong

☐ Gusty

☐ high tide: _____

☐ low tide: _____

Notes: _____

Logger was left overnight in the well, however WL does not seem to recover.

On the 24/7/19 I will remove more water to see if WL recovers.

SLUG TEST FORM GAP FORM NO. 52



Rising Head Test / Falling Head Test

PROJECT INFORMATION

Project Number / Task: 19125312
 Client: BUILT
 Site Location: 52 Scott Street, Liverpool Civic Centre

Date: 26/7/19
 By: E.W.

GROUNDWATER WELL DATA

WELL ID: BH304

Information from site:		Information from drillers log	
Well Depth (m)		Screen (from - to)	<u>9-12</u>
Stick-up length (m)		Gravel pack (from - to)	<u>8-12</u>
Pipe diameter (m)	<u>50 mm</u>	Drilled diameter (m)	
Initial WL (m TOC)	<u>9.18 m top of pipe</u>	Aquifer thickness (from - to)	
Well location (GPS)	E:	Type of formation (clay/sand/...)	<u>Fractured sandstone/shale</u>
Referential:	N:	Confined / unconfined ?	

SLUG TEST

☒ Rising Head Test
 (removal of water volume - pumping/bailing)

☐ Falling Head Test
 (insertion of air/solid slug)

Volume of slug injected / removed	<u>1L</u>	<u>1 bailer</u>	Initial displacement = Initial WL - WL at start of test		
Time (hh:mm:ss) start of test		<u>11:07</u>	Time (date & hh:mm:ss) end of test		
Manual WL at start of test* (m TOC)	<u>9.265</u>	<u>m top of pipe</u>	Manual WL at end of test (m TOC)		

*If slug added, maximum water level created by insertion of slug
 If slug removed, minimum water level created from removal of slug

Type of data record (select as appropriate)

☒ Manual

Time in seconds or minutes (or real time)

	1	2	3	4	5	6	7	8	10
Time (t)	<u>11:08</u>	<u>11:09</u>	<u>11:10</u>	<u>11:11</u>	<u>11:12</u>	<u>11:18</u>	<u>11:24</u>		
Depth to Water (m TOC)	<u>9.235</u>	<u>9.21</u>	<u>9.20</u>	<u>9.19</u>	<u>9.19</u>	<u>9.185</u>	<u>9.18</u>		

If logger used, manual data SHOULD be taken to validate logger data

☒ Data Logger

Type: Seametrics
 Rated Depth Range (m head): 10 m

Logger name/Serial NO : _____

Installation Depth / WL reading before start of test (m TOC) (precise): _____

File / test name : _____

Data downloaded and checked: _____

YES / NO

If Yes, Name of exported file: _____

☐ Vented
☒ Unvented
☐ Barologger used

OBSERVATIONS

Weather Conditions:

Temperature: _____

Precipitation : _____

Wind: _____

Moon (Tide): _____

☐ Still ☐ Light ☐ Strong ☐ Gusty
☐ high tide: _____ ☐ low tide: _____

Notes: _____

SLUG TEST FORM GAP FORM NO. 52



Rising Head Test / Falling Head Test

PROJECT INFORMATION

Project Number / Task: 19 12 53 12
 Client: Built
 Site Location: 52 Scott Street Liverpool Civic Place

Date: 26/7/19
 By: E.W

GROUNDWATER WELL DATA

WELL ID: BH306

Information from site:		Information from drillers log	
Well Depth (m)		Screen (from - to)	<u>~ 9 - 15 m</u>
Stick-up length (m)		Gravel pack (from - to)	<u>~ 8 - 15</u> (precise point of reference)
Pipe diameter (m)	<u>8.35 m b top of pipe</u>	Drilled diameter (m)	
Initial WL (m TOC)		Aquifer thickness (from - to)	
Well location (GPS)	E:	Type of formation (clay/sand/...)	<u>Fracture sandstone/shale</u> (m below GL)
Referential:	N:	Confined / unconfined ?	

SLUG TEST

☒ Rising Head Test
 (removal of water volume - pumping/bailing)

☐ Falling Head Test
 (insertion of air/solid slug)

Volume of slug injected / removed	<u>1L</u>	<u>1 boiler</u>	Initial displacement = Initial WL - WL at start of test		
Time (hh:mm:ss) start of test		<u>10:10</u>	Time (date & hh:mm:ss) end of test		
Manual WL at start of test* (m TOC)			Manual WL at end of test (m TOC)		

*If slug added, maximum water level created by insertion of slug

If slug removed, minimum water level created from removal of slug

Type of data record (select as appropriate)

☒ Manual

Time in seconds or minutes (or real time)

	1	2	3	4	5	6	7	8	10
Time (t)	<u>10:11</u>	<u>10:12</u>	<u>10:13</u>	<u>10:14</u>	<u>10:15</u>	<u>10:20</u>	<u>10:36</u>	<u>10:46</u>	
Depth to Water (m TOC)	<u>8.81</u>	<u>8.81</u>	<u>8.81</u>	<u>8.805</u>	<u>8.805</u>	<u>8.80</u>	<u>8.78</u>	<u>8.75</u>	

If logger used, manual data SHOULD be taken to validate logger data

☒ Data Logger

Type: Seametrics
 Rated Depth Range (m head): 10 m

Logger name/Serial NO: _____

Installation Depth / WL reading before start of test (m TOC) (precise): _____

File/ test name: _____

Data downloaded and checked: _____

YES / NO

If Yes, Name of exported file: _____

☐ Vented
☒ Unvented
☐ Barologger used

OBSERVATIONS

Weather Conditions:

Temperature: _____

Precipitation: _____

Wind: _____

Moon (Tide): _____

☐ Still

☐ Light

☐ Strong

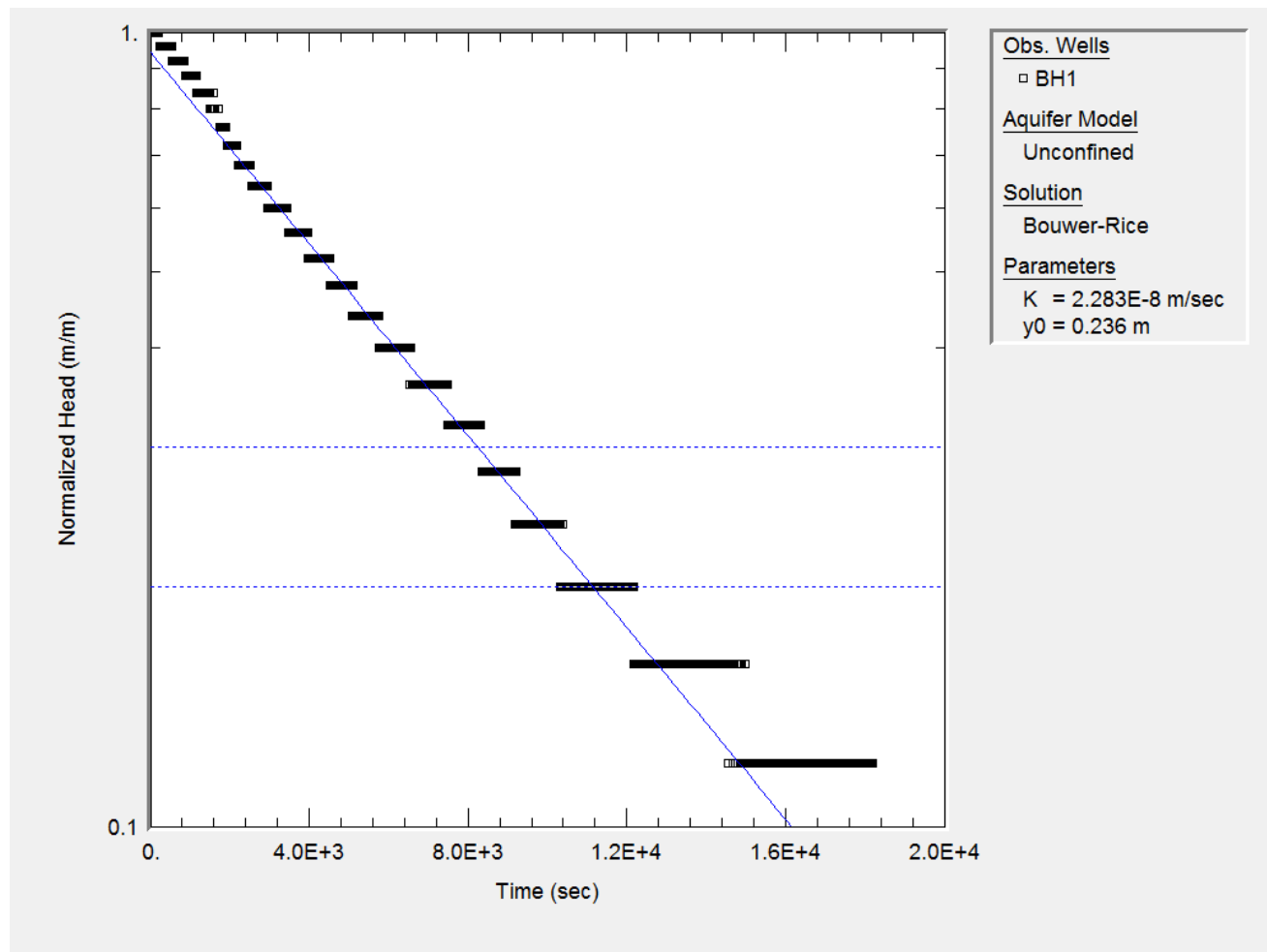
☐ Gusty

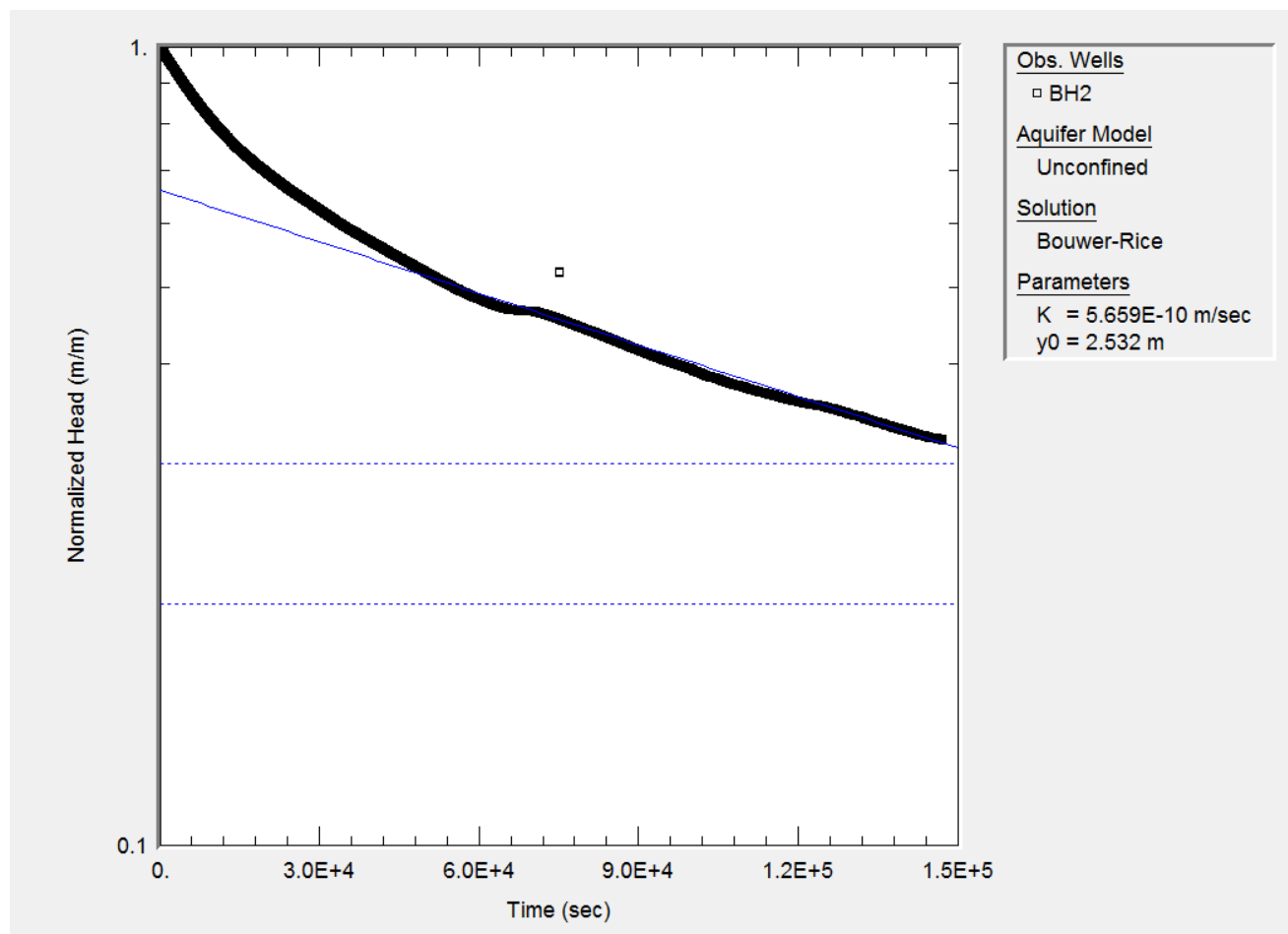
☐ high tide: _____

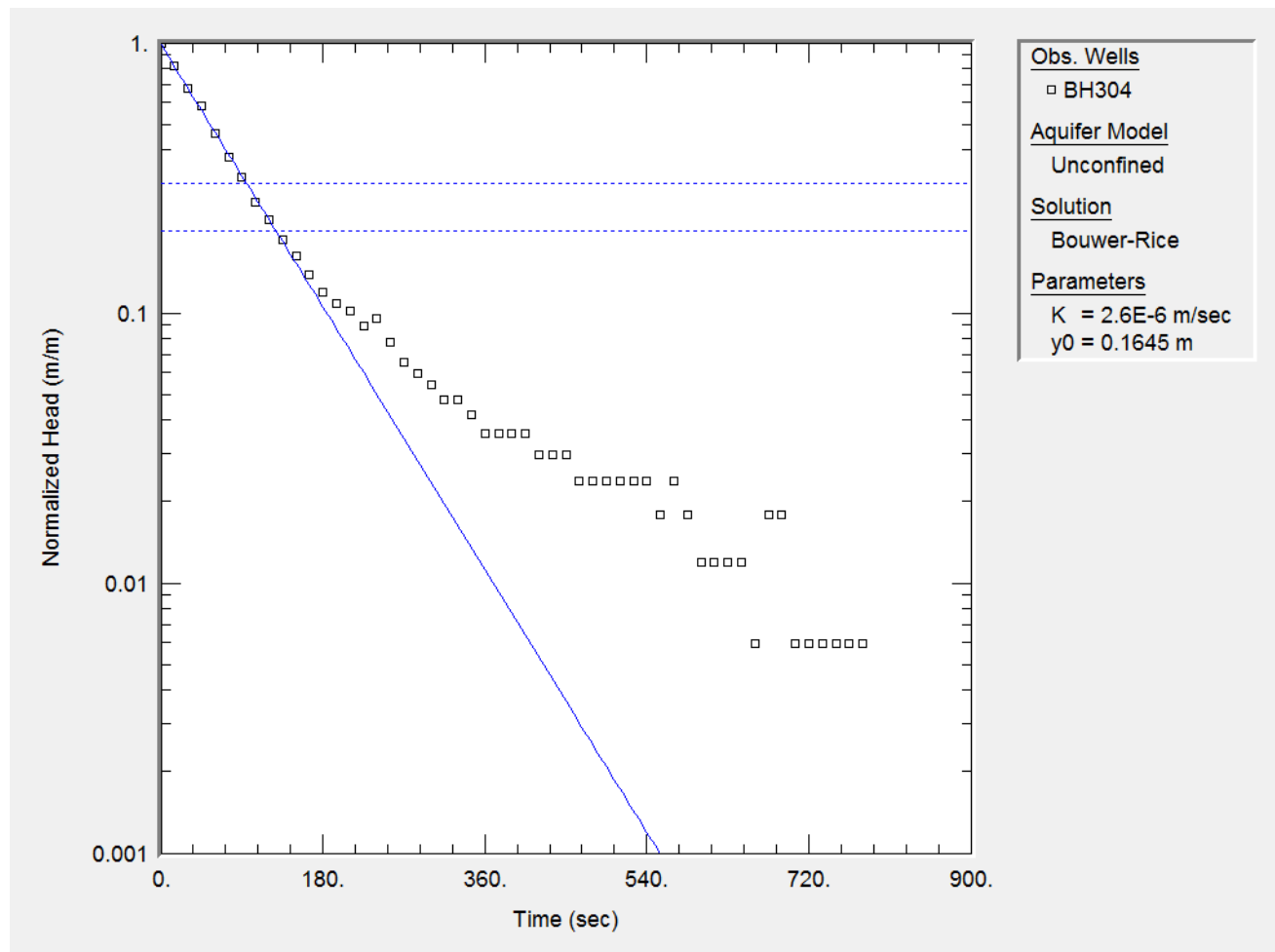
☐ low tide: _____

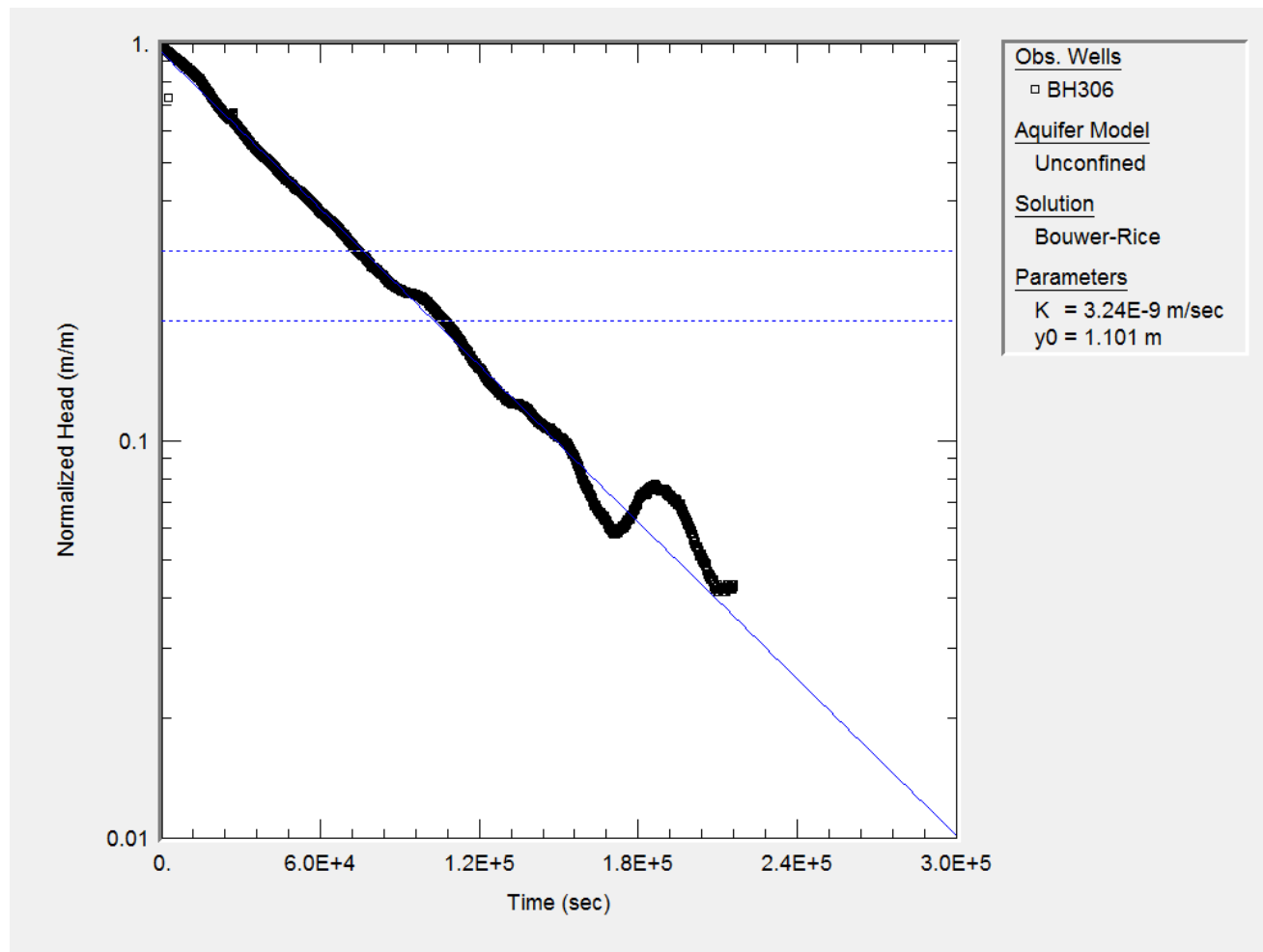
Notes: _____

F-2 *Aqtesolv*tm Outputs

BH1 Slug Test

BH2 recovery test

BH304 Slug test

BH306 Slug test

APPENDIX G

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.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

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.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

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.

By date, or revision, the Report supersedes any prior report or other document issued by Golder dealing with any matter that is addressed in the Report.

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



golder.com