

Environmental Site Assessment

8 - 14 Thompson Road, North Geelong

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Executive Summary

Leaf Corporation has engaged Golder Associates Pty Ltd (Golder) to undertake a contamination assessment (ESA) to progress resolution of contamination uncertainties as part of the proposed redevelopment of 8-14 Thompson Road, North Geelong, Victoria (Figure 1).

Given the current industrial zoning of the site and the proposal to develop the site for residential housing (a sensitive use), the rezoning and planning permit process is likely to trigger the need for an Environmental Audit or as a minimum an Environmental Audit of the area of the former service station.

In 2018 Golder undertook a contamination due diligence review of the available investigation reports (Senversa 2018a and 2018b) to assist Leaf Corporation in their due diligence for the proposed acquisition and redevelopment of the site. The ESA scope included the drilling of 9 soil bores and excavation of 15 test pits across the site, sampling and laboratory analysis of soils, installation of 4 groundwater wells, sampling of 12 groundwater wells and preparation of this ESA report.

Based on the findings of the ESA, the soil and groundwater conditions were found to be as follows:

- The former site uses include grazing; location of the former Target headquarter and associated car parking areas; former service station in the south western corner of the site. A former refuelling and washdown area and UST located adjacent the eastern boundary of the Target building. A diesel storage and backup generator is located to the north of the main Target building.
- There is no available report or information on the decommissioning of the former service station and it is not currently known if underground storage tanks/infrastructure remain insitu. As part of the subsurface survey to clear investigation locations for intrusive works, a GPR survey was undertaken across the former service station area. However, due to the nature of the underlying subsurface, the GPR could not positively identify the presence of tanks or backfilled voids to indicate that tanks had been removed. Excavations by test pit undertaken during this assessment did not identify any former infrastructure. However, the presence/absence of remaining fuel infrastructure remains a datagap. If present, this infrastructure may present as an ongoing source of groundwater impacts and will need removal.
- The depth of fill varies across the site as illustrated in Figure 3 with the deepest fill reported within the former service station area where fill depths of 3.2m and 3m were observed in SB04 and TP14 respectively. Additional investigation locations within the former service station area indicate depths ranging between 1m (MW07) and 2.7m (MW02). Shallow fill ranging between 0.25m and 0.5m was observed over the remainder of the site with fill increasing in depth towards the main building (MW05 and SB10). The deepest fill observed in the eastern portion of the site is recorded at SB02 (0.8m) and is probably related to underground structures related to the former refuelling area.
- Hydrocarbon impacted soil was observed during the drilling of MW08 and in the Senversa well MW02. Groundwater impacts (dissolved TRH) were subsequently reported indicating that the former service station has impacted the underlying soils and leached into groundwater. The residual hydrocarbon contamination requires further delineation, remediation or management,
- Soil samples in general do not pose an unacceptable risk to human health or the environment for residential use with the exception of MW02 (3.2 – 3.4m) within the former service station area which had a toluene concentration that exceeds adopted criteria for residential land use indicating a potential vapour risk at this location. Elevated arsenic and nickel in the soil is considered to be of natural origin. Some elevated zinc and mercury was found in mounded imported fill at the front of the site.

- ACM sheeting was observed in TP11 and a suspected ACM pipe within the original MW07 location. Due to the age of the site, the potential for additional ACM pipework is a high potential. The ACM will require removal as part of the site remediation,
- Based on the soil dataset the fill and natural has a preliminary classification of Fill Material for off-site disposal. An area of likely Category C material is present in mounded soil at the front of the property. No leach testing was undertaken and further classification to meet the EPA IWRG guidelines would be required as part of the removal of material offsite during the redevelopment.
- Groundwater flow at the site is easterly towards Corio Bay.
- Concentrations of inorganic (metals) compounds including copper, nickel and zinc are elevated above the adopted criteria but are most likely representative of background concentrations in the aquifer.
- Dissolved phase hydrocarbon impacts (TRH) are reported in MW02, MW08, MW09 and are likely associated with the former service station. Concentrations of TRH and benzene (Senversa 2018) are above adopted criteria at MW02 but attenuate within a short distance to be below criteria. Source removal and further assessment will be required to resolve the impacts in this area.
- Dissolved phase hydrocarbons (TRH) reported in downgradient well MW10 in the north east of the site are assessed to be from a petrogenic source however, the source of the TRH at this location is not known. As such we propose that MW10 is resampled and the results checked. If the result remains, then further groundwater analysis upgradient of MW10 to the south west will be required to try to identify the source of the contamination.

The findings of this ESA indicates that the key assessed risk to the potential development associated with contamination is likely to be associated with the resolution of groundwater based on the presence of dissolved phase hydrocarbons in groundwater both at the service station area and in the north east at MW10. The presence of TRH in the downgradient boundary well (MW10) indicates a potential unidentified source which requires further assessment to confirm.

Based on the available information, the impact of the existing contamination on the proposed land use is considered to be low as all of the contaminated fill can be managed for the proposed development. There is a low to moderate risk of finding currently unidentified contamination including asbestos in fill and in subsurface structures (i.e. pipework) and also unidentified buried infrastructure and potentially other areas of contamination not currently identified due to the presence of onsite buildings at the time of this investigation.

A strategy has been developed for the site that is aimed at further investigating and mitigating the identified contamination risks for the proposed redevelopment of the site. At this stage, site demolition and remediation of identified ACM, ACM services and potential hydrocarbon contaminated soil and infrastructure within the former service station area will be required. Further remediation action may be identified as the assessment to support the Environmental Audit is completed following site demolition.

It is recommended that:

- MW10 is resampled for TRH analysis to confirm that the concentration is present;
- An Auditor is appointed to the site;
- The strategy outlined for progressing the site towards Audit and redevelopment as set out in Section 6.3 is refined as required following review by the Auditor and then implemented.

Table of Contents

1.0 INTRODUCTION	7
1.1 Background	7
1.2 Objectives.....	7
1.3 Scope of Works	8
2.0 SITE INFORMATION	8
2.1 Site and Environmental Setting.....	8
3.0 ESA ASSESSMENT AND METHODOLOGY	10
3.1 Site Visit and Subsurface Survey.....	10
3.2 Soil Investigation	11
3.2.1 Test Pitting and Sampling.....	11
3.3 Borehole Drilling and Sampling.....	11
3.4 Groundwater Investigation.....	12
3.5 Assessment Framework	12
4.0 SOIL INVESTIGATION RESULTS	13
4.1 Subsurface Ground Conditions.....	13
4.2 Visual and Olfactory Observations.....	14
4.2.1 General Observations.....	14
4.2.2 Presence of Asbestos.....	15
4.3 Data Quality Assurance	16
4.4 Laboratory Analytical Results	17
4.4.1 Presence of elevated metals in soil	17
4.4.2 Consideration of Human Health.....	19
4.4.3 Consideration of Ecological Protection	19
4.4.4 Consideration of Aesthetics	20
4.5 Consideration of Buildings and Structures	20
4.6 Preliminary Waste Categorisation for offsite disposal	20
5.0 GROUNDWATER ASSESSMENT RESULTS.....	21
5.1 Depth of Groundwater and Inferred Groundwater Flow	21
5.2 Field Measurements and Observations	21

5.3	Data Quality Assurance	22
5.4	Laboratory Analytical Groundwater Results	22
5.4.1	Consideration of Human Health Protection	22
5.4.2	Consideration of Ecological Protection	22
5.4.3	Consideration of other beneficial uses	23
5.4.4	Dissolved phase hydrocarbons	23
6.0	IMPLICATIONS OF CONTAMINATION	24
6.1	Summary of Key Environmental Information	24
6.2	Risks to Development	25
6.3	Strategy to Achieve Environmental Audit	26
7.0	RECOMMENDATIONS	27
8.0	IMPORTANT INFORMATION	27
9.0	REFERENCES	27

TABLES

Table 1: Site Details	8
Table 2: Environmental Ranking System for Soil Contamination Assessment	14
Table 3: Summary of groundwater field parameters immediately prior to sampling (April 2019)	21
Table 4: Summary of Contamination Risks to Development	25

PLATES WITHIN TEXT

Plate 1: Typical profile of soil profile in eastern carpark (TP04)	13
Plate 2: Test Pit 14 at 2.0m	14
Plate 3: TP11 x4 pieces of ACM	16
Plate 4: MW07 suspected ACM pipe	16
Plate 5: Spatial representation of arsenic exceeding Fill Material criteria in soil (red = exceedance, blue = no exceedance)	17
Plate 6: Spatial representation of nickel exceeding Fill Material criteria in soil (red = exceedance, blue = no exceedance)	18
Plate 7: Spatial representation of mercury and zinc exceeding Fill Material criteria in soil (red = exceedance, blue = no exceedance)	19

FIGURES ATTACHED TO REPORT

Figure 1 – Site Location Plan

Figure 2 - Investigation Locations and Potential Contamination Sources

Figure 3 – Fill Depth and ACM Observations

Figure 4 – Groundwater Exceedances, TRH concentrations and Inferred Groundwater Flow

APPENDICES**APPENDIX A**

Borehole, Test Pit Logs, Groundwater Well Installation Details

APPENDIX B

Laboratory Analytical Results

APPENDIX C

Toxfree Waste Transfer Documentation

APPENDIX D

Groundwater Field Sheets

APPENDIX E

Assessment Framework

APPENDIX F

QA/QC Assessment

APPENDIX G

Analytical Results Tables

APPENDIX H

Important Information

1.0 INTRODUCTION

Leaf Corporation has engaged Golder Associates Pty Ltd (Golder) to undertake an environmental contamination site assessment (ESA) to progress the resolution of contamination uncertainties related to the proposed redevelopment of 8-14 Thompson Road, North Geelong, Victoria. The site location is presented as Figure 1.

1.1 Background

A contamination due diligence review of available investigation reports was undertaken by Golder in 2018 and is presented as *Contamination Due Diligence Review, 8 -14 Thompson Road, North Geelong (Report reference 18113054-001-L-Rev0*. The main findings of the due diligence review with respect to site contamination indicated:

- Before around 1970 the site is likely to have been used for grazing or cropping with the Target department store commercial headquarters constructed around 1970 which is currently present on site in an expanded form. The southwest portion of the site operated as a service station from around 1971 to 1996;
- Areas with the highest potential for contamination were targeted as part of the previous soil assessment (Senversa 2018) and indicate a low risk of contamination impacting upon the proposed development.
- The potential presence for elevated metals in the fill as evidenced by the high arsenic reported in soil within the Senversa (2018) soil bore SB02. The arsenic may be due to anthropogenic sources such as cattle or sheep dip associated with the adjacent saleyards or past grazing use if the site or potentially due to natural mineralisation associated with the material comprising the fill.
- There is evidence of residual hydrocarbon impacts from the former service station in the south west of the site.
- Given the use of asbestos within the main building as evidenced by the Hazmat survey, there is the risk of buried asbestos within the soils surrounding the building and as part of the underground services network.
- The general groundwater contamination risks are likely to be low based on the existing database however, the current network is not sufficient with respect to understanding groundwater quality flowing downgradient of the site or onto site.
- The main potential impact is likely to be associated with the former service station in the south west.
- It is unknown if the subsurface fuel infrastructure associated with the former service station has been decommissioned, removed or remediated.

Given the current industrial zoning of the site and the proposal to develop the site for residential housing (a sensitive use), the rezoning and planning permit process is likely to trigger the need for an Environmental Audit or as a minimum an Environmental Audit of the area of the former service station.

1.2 Objectives

Based on the above, the objective of the ESA is to :

- Assess the potential occurrence for widespread arsenic contamination, in particular in the eastern car park area;

- Reduce general soil contamination uncertainty by undertaking a general grid of soil sampling across the site;
- Further investigate the former service station via a targeted soil and groundwater assessment to better define the likely remediation requirements in this area; and
- Develop a strategy and scope for further assessment and remediation to progress the site for agreement with the Environmental Auditor (yet to be engaged).

1.3 Scope of Works

The scope of work undertaken to meet the objectives of the ESA included:

- Drilling of 9 shallow soil bores (SB04 to SB09) with four of these bores converted to groundwater wells (MW07 to MW10);
- Excavation of 15 test pits (TP01 to TP15) to varying depths across the site to characterise site conditions and depth of fill;
- Laboratory analyses of soil and groundwater samples for identified chemicals of concern previously assessed as part of Senversa 2018 assessment; and
- Preparation of this report detailing the work performed, results of the investigations and preparation of a strategy to achieve the Environmental Audit and support the proposed redevelopment of the site.

It is noted that the original scope as presented in the Golder proposal *18113054-002-P-Rev1*, dated 6 February 2019 was altered during the works as follows:

- It was initially proposed that four shallow hand augers would be advanced within the onsite buildings to assess the presence and quality of the underlying subsurface materials. However, access approval to complete these works on the day was not granted. As such, additional test pits were advanced across the site instead.
- Three groundwater wells were originally proposed to further assess groundwater quality along the western site boundary (MW07), downgradient of the former service station (MW08) and along the eastern site boundary to assess offsite groundwater quality (MW10). During the drilling of MW08, strong hydrocarbon impacts in soil were observed indicative of groundwater impacts. To assist in further delineation of groundwater hydrocarbon impacts, an additional downgradient well (MW09) was drilled and installed.

2.0 SITE INFORMATION

2.1 Site and Environmental Setting

A summary of the site details are presented in Table 1.

Table 1: Site Details

Item	Description
Address	8-14 Thompson Road, North Geelong
Lot and Plan Number	Plan PC351629
Approximate Site Area	3.8 ha
Council	City of Greater Geelong

Item	Description
Current Zoning	Industrial 1 (IN1Z)
Current Site Use	The Target department store national headquarter building is no longer tenanted. Site is vacant with the exception of the use of the carparking area in the south western portion of the site.
Surrounding Site Use	North: commercial/industrial properties South: Sphinx Hotel/Motel, golf course West: Thompson Road, public opens space, residential properties East: Geelong Stock Saleyards
Planning Overlays	Design and Development Overlay (DDO) Design and Development Plan Overlay (DDO20) Special Building Overlay (SBO)
Environmental Audit Overlay	None
Topography	The elevation of the site varies between approximately RL 21.6 m AHD in the western/central portion of the site to RL 17.5m AHD in the north eastern portion of the site. The surrounding area lies at a similar elevation with a downgradient to the east.
Regional Geology	Geological Survey of Victoria Geelong 1:63,360 Mapsheet indicates the site is underlain by Micocene to Pliocene aged Black Rock Sandstone. comprising clayey sands and silty clays. The subsurface conditions encountered during the 2019 investigation are generally consisted with a profile comprising varying extents or lenses of clayey sands, sandy clays and sand units.
Potential Acid Sulfate Soils	A review of the National Acid Sulphate Soils (ASS) Atlas (CSIRO, 2019) indicates that the site is within an area of extremely low probability of occurrence.
Nearest surface water body	The nearest surface water body to the site is Corio Bay located 1.3 km east of the site that discharges to Port Philip Bay. The Moorabool River is located 2.6km to the west of the site.
Groundwater Segment	Groundwater quality in the region is expected to be in a range between 3,500 – 7,000 mg/L total dissolved solids (TDS) (Visualising Victoria Groundwater The State Environment Protection Policy (Waters) (SEPP (Waters)), 2018. However, the site specific groundwater assessment indicates that the reported TDS falls within two segments: Segment D (5,401 to 7,100 mg/L) and Segment E (7,101 to 10,000 mg/L). For conservative purposes Segment D has been adopted for assessment purposes.

Item	Description
Regional Groundwater Use	Visualising Victoria's Groundwater (VVG, 2019) lists 27 registered bores within 1 km of the site. All bar one of the bores are listed as investigation bores for the purpose of environmental monitoring. The one exception does not have an identified use and is located approximately 490m east of the site.
Groundwater Flow	Regional groundwater flow is inferred to be flowing east towards Corio Bay. The findings of the ESA groundwater assessment indicates that groundwater at the site flows in an east to north east direction towards Corio Bay.
Site History	Senversa (2018a) indicates that: ■ before around 1970 the site is likely to have been used for grazing or cropping, ■ the Target department store commercial headquarters was constructed around 1970 and is currently present on site in an expanded form.. In relation to the Target use of the site: ■ The southwest portion of the site operated as a service station from around 1971 to 1996; ■ A vehicle refuelling and washdown area was located on the east side of the main building ■ A diesel underground storage tank is currently in for a backup generator on the north side of the main building. ■ Hazardous materials within buildings such as asbestos have been identified by a HazMat audit

3.0 ESA ASSESSMENT AND METHODOLOGY

3.1 Site Visit and Subsurface Survey

Golder attended the site on 21 March 2019 with a subsurface locating contractor, Access Utility Engineering (AUE). The objective was to undertake a visual inspection of the site and assess the site for the presence of subsurface utilities so to safely undertake the drilling and test pit works.

As part of the subsurface survey, ground penetrating radar (GPR) techniques were implemented to assist in the assessment of the presence of remaining subsurface structures (tanks and pits) and in particular with respect to the former service station and the refuelling area east of the main site building (Figure 2). However, due to the nature of the resurfacing works in these areas, it was not possible for the GPR to positively confirm the presence of insitu tanks or pits associated with the former fuel storage use.

In addition to the GPR survey, Golder also reviewed available sources for further site history regarding the site and the service station with a view to obtaining potential layouts of the tank and underground infrastructure. At this stage no further information has come to light with regard to the service station configuration other than historical aerial photos of the general area.

3.2 Soil Investigation

3.2.1 Test Pitting and Sampling

The field investigation was undertaken between 25 and 26 March 2019 with Golder engaging Fry's Earthmoving (excavator operator) to undertake the test pitting works. The locations of the test pits are presented as Figure 2 and the test pit logs included as Appendix A.

A total of 15 test pits were advanced (TP01 to TP15) and at each location (where required) the asphalt was cut using a demolition-saw and moved to the side of the excavation. The excavator removed soil in shallow layers and stockpiled the material next to the excavation. The target depth of the test pits was considered reached when the fill and natural boundary was observed. The final depths advanced ranged between 0.75m and 3m bgl.

The test pit locations were selected to provide a broad visual assessment of the subsurface quality, presence and depth of fill material across the site to inform the future development. In addition, a visual assessment for the presence of Asbestos Containing Material (ACM) was undertaken by the Golder field scientist. Where visually observed the location and depth was recorded and a sample was bagged and forward to the laboratory. This is further discussed in Section 4.2.2.

Soil samples were collected from each test pit targeting primarily the fill material however, the underlying natural material was also sampled. Each soil sample was collected using dedicated nitrile gloves and then placed into laboratory-supplied glass jars with Teflon®-lined screw lids and minimal headspace. Soil samples were labelled and placed in an esky on ice for transport to NATA-accredited laboratories for analyses (ALS and Eurofins Laboratory). Each sample, including quality assurance samples, was given a unique sample identification number on a chain-of-custody form (CoC). Laboratory documents including CoCs are provided in Appendix B. Soil samples were field screened for the presence of detectable volatile compounds using a photo ionisation detector (PID).

Thirty primary soil samples were analysed for a mix of IWRG621 waste classification screens and metals/PAHs/TRH/MAH/OCP suite of analytes.

On completion of the soil assessment, each test pit was backfilled with the excavated material. As far as practicable the material was reinstated and compacted in the same order as it was removed. The test pits were left mounded with the excess fill material and the asphalt was stockpiled at the boundary of the carpark as per communication with the client site contact. The test pit locations were surveyed on the 3 April 2019.

3.3 Borehole Drilling and Sampling

The borehole drilling was undertaken between 28 and 29 March 2019 with Golder engaging Star Drilling (drilling operator) to undertake the drilling and groundwater well installation. A total of 12 shallow soil bores were advanced using push tube and auger techniques (SB04 – SB11 and MW07 – MW10) with 4 advanced deeper to install as groundwater monitoring wells (MW07 to MW10). A PID was used to monitor for volatile compounds during drilling works. The locations of the boreholes are presented as Figure 2.

All boreholes were logged in the field by the Golder scientist. Detailed descriptions of the soil profile encountered at each borehole location was documented in accordance with the Unified Soil Classification System (USCS). Borehole reports are presented in Appendix A.

Soil samples were collected as per the methodology presented in the test pitting section. Twenty two primary soil samples were analysed for a mix of the IWRG621 waste classification screen and metals/PAHs/TRH/MAH/OCP suite of analytes.

At the completion of drilling at each location excess soil was contained in 105L drums for offsite disposal that was undertaken by Toxfree on 3 April 2019. The waste transport certificate is provided in Appendix C. Where soil bores were advanced in hardstand areas the surface was reinstated with a cement seal.

3.4 Groundwater Investigation

Four groundwater monitoring wells were installed at the site between 28 and 29 March 2019:

- MW07 was installed upgradient of the previous observed hydrocarbon impacted well, MW02, in proximity to Thompson Road located along the western boundary.
- MW08 and MW09 were installed downgradient of MW02 in the carpark of the former service station to better assess the extent of groundwater contamination reported in MW02.
- MW10 was installed on the north-east boundary of the site to assess groundwater quality leaving the site.

A bore construction licence (BCL) was obtained from Southern Rural Water (reference WLE074089). The well construction details are included as Appendix A. Groundwater sampling records have been included in Appendix D.

The groundwater wells were developed using air lifting techniques to remove introduced materials during the drilling and construction works. The groundwater from the well development as well as the drilling spoil was placed into drums and disposed of offsite by Toxfree on 3 April 2019. The waste transport certificate is provided in Appendix C.

One round of groundwater sampling was undertaken at the four newly installed and 8 existing wells between 1 to 3 April 2019. The water level of each groundwater well was gauged prior to sampling for the assessment of flow direction. Each groundwater well was surveyed by a licensed surveyor for the coordinates and elevation above Australian Height Datum (AHD).

Sampling was undertaken using low flow techniques with a micropurge system. As part of the field quality control dedicated tubing was used for each groundwater monitoring well location to prevent cross contamination. Re-usable sampling equipment was decontaminated between well locations. Groundwater samples were placed into appropriately preserved bottles supplied by the laboratory. Filled bottles were placed in chilled eskies and delivered to the laboratory under chain of custody (COC) documentation (provided in Appendix B).

Primary groundwater samples were submitted to the primary laboratory Australian Laboratory Services (ALS) for testing and a secondary intra duplicate sample submitted to Eurofins mgt.

The primary groundwater samples were submitted for the following analysis: pH, total dissolved solids, metals (allowance for 8 metals), TRH, monocyclic aromatic hydrocarbons (BTEXN), polycyclic aromatic hydrocarbons (PAH), nitrate, sulphate, ammonia and volatile organic compounds (VOC) and the secondary sample for a reduced suite of analytes. Laboratory analytical results are discussed in 5.4.

3.5 Assessment Framework

The adopted Assessment Framework for soil and groundwater at the site in line with the State Environment Protection Policy (Prevention and Management of Contaminated Land) and State Environment Protection Policy (Waters) for both the soil and groundwater assessment in light of the proposed residential development is outlined in Appendix E.

4.0 SOIL INVESTIGATION RESULTS

4.1 Subsurface Ground Conditions

The subsurface units encountered during the investigation are summarised below. Soil logs are included as Appendix A. Photographs illustrating the fill and natural units at the site are presented as *Plate 1* and *Plate 2*.

Unit 1 – Fill

The depth of fill varies across the site as illustrated in Figure 3 with the deepest fill reported within the former service station area where fill depths of 3.2m and 3m were observed in SB04 and TP14 respectively. Additional investigation locations within the former service station area indicate depths ranging between 1m (MW07) and 2.7m (MW02).

Shallow fill generally ranging between 0.25m and 0.5m thickness was observed over the remainder of the site with fill increasing in depth towards the main building (MW05 and SB10). The deepest fill observed in the eastern portion of the site is recorded at SB02 (0.8m) and is probably related to underground structures in the former refuelling area.

The shallower fill material generally consisted of medium grained, angular sandy gravel and where deeper consisted of low to medium plasticity sandy clays. The base of fill was encountered in each investigation location.

Unit 2 – Natural

The natural material underlying the site consisted of alternating layers of sand, sandy clay, clayey sand, sand becoming a sandy clay or clay at depth (MW08 to MW10). A fine grained sandy layer is observed where the water table was noted during the drilling works.



Plate 1: Typical profile of soil profile in eastern carpark (TP04)



Plate 2: Test Pit 14 at 2.0m.

4.2 Visual and Olfactory Observations

4.2.1 General Observations

An assessment of each soil sample was made in the field and involved ranking based on both olfactory and visible evidence of contamination. Each soil sample was given a ranking in accordance with Table 2: as presented in the borehole and test pit logs included as Appendix A.

Table 2: Environmental Ranking System for Soil Contamination Assessment

Visible Contamination		Odorous Soil	
Rank	Description	Rank	Description
0	No visible evidence of contamination	A	No odour
1	Slight evidence of visual contamination	B	Slightly offensive odour
2	Visible contamination	C	Moderately offensive odour
3	Obviously contaminated	D	Strongly offensive odour

In general, the fill and underlying material quality across the site was observed to not be visually impacted or contain aesthetically unsuitable material and this is noted by the 0A ranking in the borehole/test pit logs. No gross hydrocarbon impacts were observed in the test pits located within the former service station or in

proximity to the former refuelling area or diesel storage. Where contamination and aesthetically impacted material is noted as part of the ESA, the following observations are made:

- The presence of waste material (including concrete, brick fragments, trace plastic, charcoal, bullet casing at various locations) observed in fill material within SB05 (0.4 – 2m bgl), TP11 (0.05 to 0.65m bgl) and TP14 (0.2 to 0.4m and 0.95 to 3m bgl);
- Hydrocarbon impacts in soil (visual and olfactory) observed in:
 - MW08 at depths of 4.95m and between 5.15 and 5.3m bgl. The highest PID concentration reported during the ESA (317 ppm) was also recorded at this location indicating the presence of volatile compounds in soil and within the saturated zone; and
 - MW09 at depths of 4.95m bgl. Mild hydrocarbon odours were reported but not visual impacts in soil was observed. PID readings ranged between 4.4 and 5 ppm indicating a low risk of volatile compounds to be present.

4.2.2 Presence of Asbestos

As part of this ESA, ACM was observed in two locations during the soil program (refer to Figure 3):

- TP11 at a depth between 0.15 and 0.65m and in the form of ACM sheeting as illustrated in *Plate 3*. TP11 was advanced within the landscaped mound located behind the white concrete wall in the north western portion of the site. The height of the mound was approximately 0.65m and so at this depth the base of the test pit was approximately level with the surrounding grassed area.
- During hand augering for MW07, refusal was reached at 0.4m bgl and a piece of ACM approximately 50mm x 50mm with a curved edge was removed from the hole as illustrated in *Plate 4*. On further inspection of the hole a suspected ACM pipe running north-south in the garden bed adjacent to the Thompson Road boundary was observed. The location was noted and the hole abandoned and subsequently backfilled.

A sample of ACM from both locations (TP11/ASB01 and MW07b/ASB01) was forwarded to ALS laboratory for identification. Both samples tested positive for the presence of asbestos fibres. The laboratory certificate is included as Appendix B.



Plate 3: TP11 x4 pieces of ACM



Plate 4: MW07 suspected ACM pipe

4.3 Data Quality Assurance

A summary of the soil quality control data collected and reported along with a calculation of completeness assessment is summarised in Appendix F and indicates that the overall QA/QC completeness for the soil results is above the overall objective of 95%. Based on this, it is considered that the overall data quality generated during the assessment of soil is of sufficient quality upon which to base decisions for this assessment.

4.4 Laboratory Analytical Results

The following section presents an assessment of the soil analytical results, identification of key contaminants and an assessment of the results screened against the adopted assessment criteria. The Senversa 2018 soil analytical dataset has been included as part of our assessment. Tabulated analytical results are provided in Table G1, Appendix G. Laboratory reports are presented in Appendix B. A plan of the soil sample locations is presented as Figure 2.

4.4.1 Presence of elevated metals in soil

Elevated concentrations of metals were previously identified in the 2018 Senversa investigation at the site (arsenic and nickel). The reported concentration of arsenic (Senvessa soil bore SB02) exceeded commercial ecological criteria and was observed in the shallow fill material. Similarly, nickel concentrations exceeding ecological criteria were observed in fill within the Senvessa soil bores MW02 and SB02.

As part of the Golder ESA, elevated concentrations of nickel, arsenic, zinc and mercury have been reported in the soil dataset across the site. With the exception of one sample, metal concentrations in soil do not pose an unacceptable health risk (refer to Section 4.4.2) but do exceed ecological criteria for arsenic in natural material at MW08 (refer to Section 4.4.3). The following section presents on the presence and distribution of metals in soil based on the complete soil dataset. As a point of reference, offsite disposal criteria for Fill Material have been used to illustrate the distribution of the metals.

Arsenic

Concentrations of arsenic exceeding Fill Material criteria are illustrated as Plate 5.



Plate 5: Spatial representation of arsenic exceeding Fill Material criteria in soil (red = exceedance, blue = no exceedance)

The presence of elevated arsenic generally is reported in fill material. However, where analysed, natural samples reported the highest concentrations (MW08 4.85 – 4.95m reported 105 mg/kg and MW09 4.9 - 5m reported 86 mg/kg) when assessed against the highest fill concentration (SB10- 0.3 – 0.4m reported 41 mg/kg). As the highest arsenic concentrations are shown be present in the natural material it can therefore be considered that the reported range of arsenic concentrations are representative of background conditions including background mineralisation within the soil matrix forming the fill.

Nickel

Concentrations of nickel exceeding Fill Material criteria are illustrated as Plate 6.

The presence of elevated nickel generally is reported in fill material with concentrations ranging between 63 mg/kg and 145 mg/kg exceeding Fill Material criteria (60 mg/kg). Where analysed, natural material reported concentrations ranging between 11 mg/kg (MW08 5.6 -5.7m) and 9 mg/kg (TP13 2.9 -3m) indicating that fill material concentrations are higher than recorded concentrations from natural material. However, no samples exceed the adopted health and ecological criteria.

The elevated nickel fill concentrations in fill were often associated with the presence of crushed rock of basaltic origin forming the sub pavement materials. Nickel is known to be naturally elevated within basaltic material and hence the elevated nickel is considered likely to be associated with natural mineralisation within the crushed rock and not due to anthropogenic sources from activities on site.

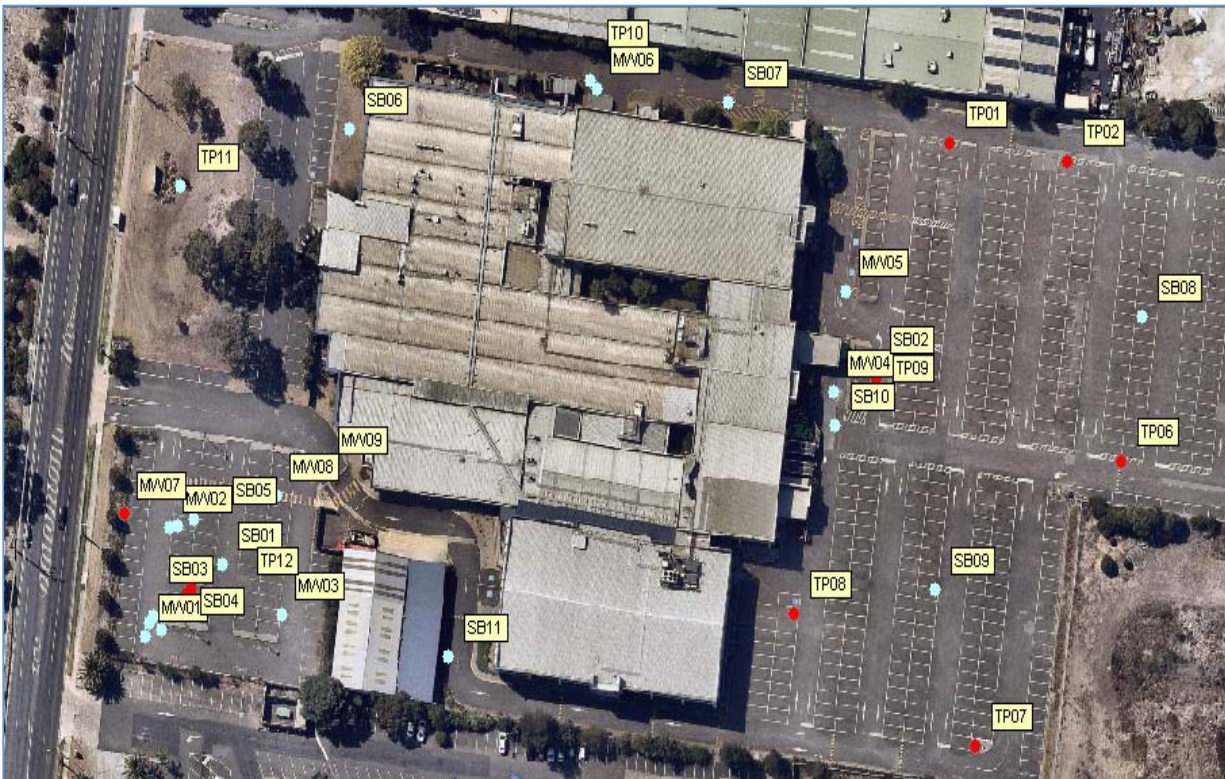


Plate 6: Spatial representation of nickel exceeding Fill Material criteria in soil (red = exceedance, blue = no exceedance)

Mercury and Zinc

Concentrations of mercury and zinc exceeding Fill Material criteria are illustrated as Plate 7.

Where exceeding Fill Material criteria, one concentration of mercury (1.6 mg/kg) and zinc (291 mg/kg) is co located in sample TP11 at a depth of 0.2 to 0.3m within imported mounded material and is likely attributed to the presence of waste material observed at this investigation location. This is further assessed on the basis that all other soil samples analysed for mercury report concentrations below the laboratory limit of reporting and the average concentration reported for zinc across the dataset is 33 mg/kg. Hence, different to the nickel and arsenic, the mercury and zinc are considered to be contamination within the fill material in this area.

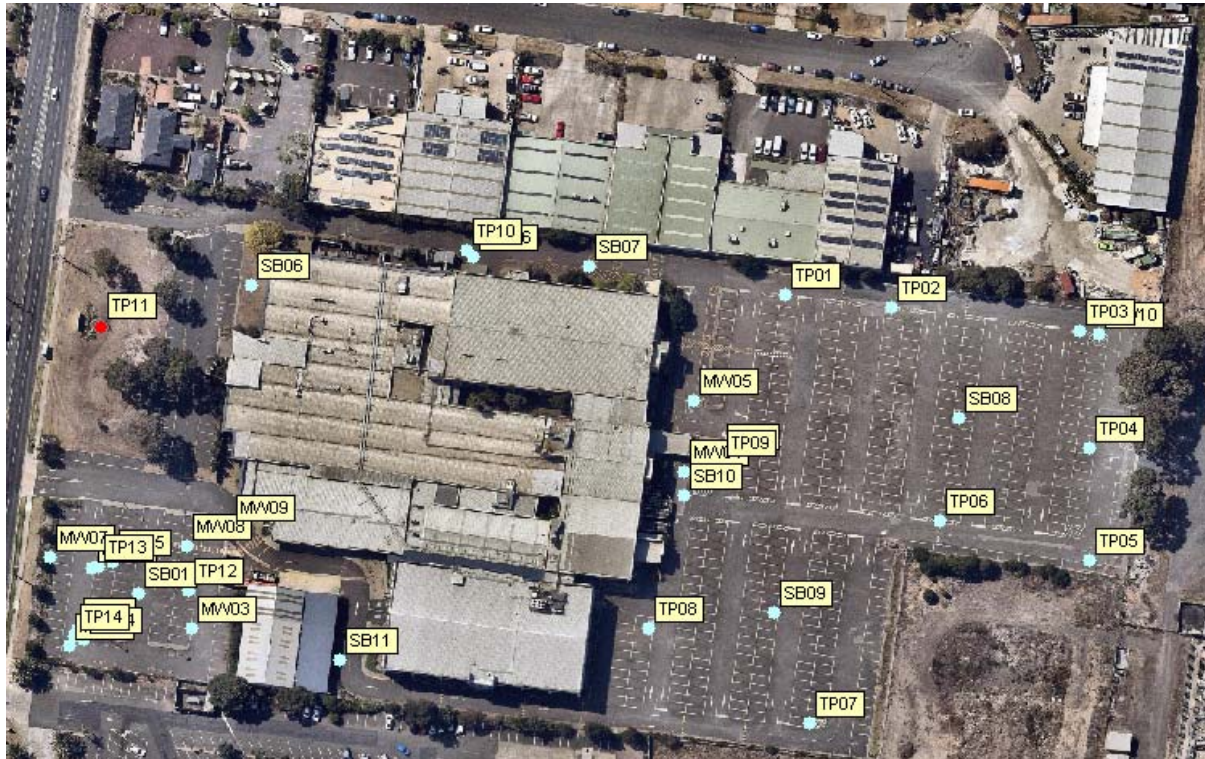


Plate 7: Spatial representation of mercury and zinc exceeding Fill Material criteria in soil (red = exceedance, blue = no exceedance)

4.4.2 Consideration of Human Health

Three samples have been found to exceed the adopted human health criteria for unrestricted residential use of the site:

- MW08 (4.85 to 4.95m) and SB02 (0.2 -0.3m) report a concentration of 105 mg/kg and 240 mg/kg respectively of arsenic exceeding the adopted criterion of 100 mg/kg.
- MW02 (3.2 -3.4 m) reported TRH C₆-C₁₀ (F1) and TRH C₁₀-C₁₆ (F2) concentrations of 590 mg/kg and 580 mg/kg exceeding the HSL for residential landuse of 110 mg/kg and 440 mg/kg respectively, which is protective of the vapour pathway.

As indicated in Section 4.4.1, the arsenic concentrations on site are considered to be naturally occurring and as such not an unacceptable risk to human health. The hydrocarbon concentrations have been found in the key source area of the former service station at MW02 and will require remediation or further assessment or management.

4.4.3 Consideration of Ecological Protection

In general, concentrations reported below the adopted soil screening criteria for ecological protection in all samples analysed with the exception of the following:

- Soil sample MW08 (4.85 to 4.95m) and SB02 (0.2 -0.3m) reported a concentration of 105 mg/kg and 240 mg/kg respectively of arsenic exceeding the criteria for EIL urban residential screening of 100 mg/kg.
- Soil sample MW02 (3.2 -3.4 m) reported a concentration of 210 mg/kg for toluene and exceeding the ESL for urban residential criteria of 105 mg/kg.
- Shallow soil samples TP01 (0.1 – 0.2m) reported a concentrations of 0.9 mg/kg for benzo(a)pyrene exceeding the ESL urban residential screening of 0.7 mg/kg.

As presented in Appendix F, the application of the EILs and ESLs are applicable to soil from the surface to 2m depth below the finished surface/ground level. As such, those samples currently at depths greater than 2 m do not pose an unacceptable risk to ecological receptors. The remaining exceedances in the surface fill are due to arsenic which is naturally occurring (Section 4.4.1) and in the case of the benzo(a)pyrene are marginal and unlikely to pose an unacceptable risk to ecological receptors.

4.4.4 Consideration of Aesthetics

Observations made during the soil investigation indicate that the fill at the site in general, does not indicate gross aesthetic impacts. Where observed, the impacts are localised and associated with uncontrolled fill (TP11 – presence of waste material and ACM) and hydrocarbon impacts associated with the former service station (MW02, MW08, MW09). Identified ACM and odourous and impacted soils associated with the former service station will require remediation or further assessment and management

4.5 Consideration of Buildings and Structures

The reported soil pH ranged between 5.3 to 8 pH which would give a non-aggressive exposure classification for concrete or steel piles in soil at the site. Chloride and sulphate was not analysed as part of this investigation, which may also impact on the exposure classification.

Design and installation of subsurface infrastructure will need to take into account the conditions present.

4.6 Preliminary Waste Categorisation for offsite disposal

During development of the site, soil material surplus to requirements (i.e. not required for onsite reuse) will require classification prior to disposal as outlined above. As part of this ESA, a preliminary assessment of waste classification with respect to offsite disposal was undertaken. A total of 49 primary soil samples were collected and screened for IWRG waste classification suite of analysis or for a reduced suite of chemicals of interest at the site. The results of the soil screening against the IWRG criteria are summarised in Table G2, Appendix G.

The preliminary assessment indicates that fill and natural material at the site in general would be classified as Fill Material or Category C based on the reported concentrations of metals including, arsenic, mercury, nickel and zinc.

With respect to the arsenic and nickel, the review of metals concentrations on site indicate that they are likely to be naturally occurring. As such, In accordance with EPA Publication IWRG600.2 *Waste Categorisation*, elevated concentrations of metals from a natural origin adopt a chemical classification of Fill Material.

In addition, in accordance with the Guidelines (IWRG702) further assessment via statistical analysis was undertaken for the nickel dataset. The statistical analysis was undertaken using USEPA ProUCL Version 5.1 where an assessment of the soil waste classification can be made with respect to the 95% Upper Confidence Limit on the arithmetic mean (95% UCL_{average}). The calculated 95% UCL_{average} concentration for a given analyte indicates that, with 95% certainty, the average concentration will not exceed the calculated 95% UCL_{average} concentration. The following is noted:

- Statistical analysis undertaken for nickel as part of this ESA calculates a concentration of 56.98mg/kg which is below the Fill threshold criteria of 60mg/kg.

Hence with the exception of the area of associated with the zinc and mercury, the remaining fill and natural soil investigated to date has a preliminary classification of Fill Material although we note that there is likely to be some material within the former service station that will be more heavily contaminated.

The exceedance of zinc and mercury is localised to fill material containing waste as observed in TP11 only indicating the material represented by this location is likely to be classified as Category C Contaminated Soil.

The offsite disposal classifications provided in this report are preliminary only and additional sampling, analysis and classification is likely to be required to meet the requirements of EPA IWRG and satisfy a landfill or other receiving site for acceptance for disposal. No ASLP leach testing was undertaken as part of this ESA.

5.0 GROUNDWATER ASSESSMENT RESULTS

5.1 Depth of Groundwater and Inferred Groundwater Flow

The groundwater monitoring wells were gauged to assess groundwater depth and groundwater flow at the site. The water levels observed are illustrated as Figure 4. Based on the groundwater elevation groundwater wells, groundwater is inferred to flow in an easterly to north east direction towards Corio Bay.

5.2 Field Measurements and Observations

Field parameters were collected following purging of the groundwater well and prior to the collection of a groundwater sample. The field parameters are presented in Table 3 with groundwater sampling field records included as Appendix D.

Table 3: Summary of groundwater field parameters immediately prior to sampling (April 2019)

Well ID	Total Volume Purged (L)	Conductivity (uS.cm)	Temp (°C)	pH	Redox potential (mV)	Dissolved Oxygen (mg/L)
MW01	12.1	10667	21.1	6.91	126.5	1.97
MW02	6.4	11448	23.0	6.16	-16.9	4.39
MW03	5	11179	21.8	6.86	101.7	1.94
MW04	14.9	9848	18.8	7.26	145.5	3.54
MW05	3	13152	20.2	7.09	158.3	2.73
MW06	11.5	11558	19.3	6.27	152.4	3.59
MW07	8	10397	19.9	6.89	139.9	2.44
MW08	3.6	10801	21.5	6.98	128.6	1.84
MW09	3.8	9796	21.2	7.06	109.4	3.01
MW10	4.2	13836	21.8	7.04	124.1	3.70
MW22	4.3	12352	21.3	6.71	0.8	2.36

Well ID	Total Volume Purged (L)	Conductivity (uS.cm)	Temp (°C)	pH	Redox potential (mV)	Dissolved Oxygen (mg/L)
MW25	4.3	11067	18.5	6.91	143.7	2.44

We note that two additional wells were located on site in the area of MW22 and MW25. They were also dipped but both wells were dry.

Table 3 indicates the following:

- DO measurements ranged between 1.84 ppm (MW08) and 4.39 ppm (MW02);
- Redox potential (Eh) measurements ranged between 0.8 mV (MW22) and 158.3 mV (MW05);
- pH ranged from 6.16 (MW02) to 7.26 (MW04) indicative of neutral conditions;
- Electrical Conductivity (EC) ranged from 9,848 uS/cm (MW04) to 13,836 uS/cm (MW10) indicative that the groundwater is brackish and consistent with the reported TDS concentrations;
- Groundwater temperatures ranged from 18.5° C (MW25) to 23° C (MW02); and
- Mild hydrocarbon odours were observed in MW02 only, no other odours or sheens were noted.

5.3 Data Quality Assurance

A summary of the groundwater quality control data collected and reported along with a calculation of completeness assessment is summarised in Appendix F and indicates that the overall QA/QC completeness for groundwater results is above the overall objective of 95%. Based on this, it is considered that the overall data quality generated during the assessment of groundwater is of sufficient quality upon which to base decisions for this assessment.

5.4 Laboratory Analytical Groundwater Results

The results of the groundwater analyses compared with the adopted criteria for each beneficial use is presented in Table G3, Appendix G and are discussed in the following sections.

5.4.1 Consideration of Human Health Protection

Concentrations of benzene in MW02 (Senversa 2018) exceed the ADGW health (0.001 mg/L) screening criteria reporting a concentration of 0.003 mg/L. However, during the recent 2019 sampling event, we note that MW02 reported a non-detect concentration of benzene and as such does not exceed the adopted criteria. There were no other exceedences of adopted criteria for the protection of human health.

5.4.2 Consideration of Ecological Protection

Concentrations of copper (all wells with the exception of MW22), nickel (MW01, MW07 to MW09, MW22 and MW25) and zinc (all wells) exceed the relevant criteria for ecosystem protection (marine 95% protection). MW07 and MW01 are considered background wells for the site. The concentrations of copper, nickel and zinc are elevated in these two wells indicating that the metals concentrations measured are likely to represent background metals concentrations in the aquifer.

In addition, the ethylbenzene concentration (0.019 mg/L) in MW02 also exceeds the adopted marine guidelines for the impacted well within the former service station area. The ethylbenzene concentrations

reduce to below criteria beyond MW02. The applicability of the adopted guideline is at the point of discharge into the receiving ecosystem which is likely to be Corio Bay some 1.3 km east of the site. As such, attenuation processes over distance will decrease concentrations and so the risk of impact associated with marine ecosystems is considered acceptable.

5.4.3 Consideration of other beneficial uses

The following is noted with respect to the identified beneficial uses as presented in Appendix E:

- No exceedances of the ANZECC livestock drinking water criteria (protective of stock watering) were reported.
- Groundwater was not analysed for chloride however, pH concentrations (generally neutral) are indicative of non-aggressive conditions with respect to the protection of buildings and structures.
- Industrial water use could be precluded due to the exceedence of benzene in groundwater at MW02 based on the Senversa (2018) result but the 2019 concentrations were below LOR.

Further monitoring to confirm the 2019 concentrations will be required as part of the environmental audit process.

5.4.4 Dissolved phase hydrocarbons

TRH concentrations were reported in groundwater wells MW02, MW08, MW09 and MW10. Concentrations reported in MW02 during this ESA report in the same concentration range to those reported by Senversa in 2018. All samples report below the adopted health criteria for vapour risk (HSL A/B).

The reported TRH in MW02 is related to the former service station and to assess the extent of the groundwater impacts in MW02, MW08 and MW09 were installed and sampled. The TRH concentrations reported in both wells indicate the presence of a dissolved phase plume downgradient to MW02. The reported TRH fractions in both wells report similar concentrations, with the concentrations reporting lower than those in MW02, indicating attenuation is taking place downgradient of the source (i.e. former service station).

TRH reported in downgradient well, MW10 (located at the north eastern boundary) is at concentrations in the same range to those reported in MW08. The MW10 results were unexpected based on the visual observations reported in soil and distance to the known potential former fuel sources onsite i.e. approximately 270m from the former service station area and approximately, 120 m from the former refuelling area. As such, Golder requested the laboratory to recheck the results for potential false positive reporting.

The laboratory confirmed the concentrations were true and so further testing by the laboratory to assess the potential source was requested. This testing is referred to as silica gel clean-up (TRHSG) and the testing can facilitate a better representation on the presence of petroleum hydrocarbons within the reported TRH concentration. The methodology used is such that the sample is passed through a solvent extract containing activated silica- gel particles with the theory that polar compounds (typically non-petrogenic hydrocarbons) absorb to the extract and non-polar (typically petrogenic hydrocarbons) dissolve in the extract. The analysis excludes the polar compounds and what remains is generally indicative of a petrogenic source.

The results of the TRH analysis (Table G3, Appendix G) indicate that the TRH reported in the sample from MW10 are likely to be from a petrogenic source.

The source of the TRH in MW10 is currently unknown and as such we propose that MW10 is resampled and the results checked. If the result remains, then further groundwater analysis upgradient of MW10 to the south west will be required to try to identify the source of the contamination.

6.0 IMPLICATIONS OF CONTAMINATION

6.1 Summary of Key Environmental Information

Based on the findings of the historic information at the site and the findings of the ESA, the environmental issues at the site can be broadly summarised as follows:

- The former site uses include grazing; location of the former Target headquarter and associated car parking areas; former service station in the south western corner of the site. A former refuelling and washdown area and UST located adjacent the eastern boundary of the Target building. A diesel storage and backup generator is located to the north of the main Target building.
- There is no available report or information on the decommissioning of the former service station and it is not currently known if underground storage tanks/infrastructure remain insitu. As part of the subsurface survey to clear investigation locations for intrusive works, a GPR survey was undertaken across the former service station area. However, due to the nature of the underlying subsurface, the GPR could not positively identify the presence of tanks or backfilled voids to indicate that tanks had been removed. Excavations by test pit undertaken during this assessment did not identify any former infrastructure. However, the presence/absence of remaining fuel infrastructure remains a datagap. If present, this infrastructure may present as an ongoing source of groundwater impacts and will need removal.
- The depth of fill varies across the site as illustrated in Figure 3 with the deepest fill reported within the former service station area where fill depths of 3.2m and 3m were observed in SB04 and TP14 respectively. Additional investigation locations within the former service station area indicate depths ranging between 1m (MW07) and 2.7m (MW02). Shallow fill ranging between 0.25m and 0.5m was observed over the remainder of the site with fill increasing in depth towards the main building (MW05 and SB10). The deepest fill observed in the eastern portion of the site is recorded at SB02 (0.8m) and is probably related to underground structures related to the former refuelling area.
- Hydrocarbon impacted soil was observed during the drilling of MW08 and in the Senversa well MW02. Groundwater impacts (dissolved TRH) were subsequently reported indicating that the former service station has impacted the underlying soils and leached into groundwater. The residual hydrocarbon contamination requires further delineation, remediation or management,
- Soil samples in general do not pose an unacceptable risk to human health or the environment for residential use with the exception of MW02 (3.2 – 3.4m) within the former service station area which had a toluene concentration that exceeds adopted criteria for residential land use indicating a potential vapour risk at this location. Elevated arsenic and nickel in the soil is considered to be of natural origin. Some elevated zinc and mercury was found in mounded imported fill at the front of the site.
- ACM sheeting was observed in TP11 and a suspected ACM pipe within the original MW07 location. Due to the age of the site, the potential for additional ACM pipework is a high potential. The ACM will require removal as part of the site remediation,
- Based on the soil dataset the fill and natural has a preliminary classification of Fill Material for off-site disposal. An area of likely Category C material is present in mounded soil at the front of the property. No leach testing was undertaken and further classification to meet the EPA IWRG guidelines would be required as part of the removal of material offsite during the redevelopment.
- Groundwater flow at the site is easterly towards Corio Bay.
- Concentrations of inorganic (metals) compounds including copper, nickel and zinc are elevated above the adopted criteria but are most likely representative of background concentrations in the aquifer.

- Dissolved phase hydrocarbon impacts (TRH) are reported in MW02, MW08, MW09 and are likely associated with the former service station. Concentrations of TRH and benzene (Senversa 2018) are above adopted criteria at MW02 but attenuate within a short distance to be below criteria. Source removal and further assessment will be required to resolve the impacts in this area.
- Dissolved phase hydrocarbons (TRH) reported in downgradient well MW10 in the north east of the site are assessed to be from a petrogenic source however, the source of the TRH at this location is not known. As such we propose that MW10 is resampled and the results checked. If the result remains, then further groundwater analysis upgradient of MW10 to the south west will be required to try to identify the source of the contamination.

6.2 Risks to Development

Given the above, the key project risks due to contamination are presented in Table 4.

Table 4: Summary of Contamination Risks to Development

Identified Risk	Type of Risk to Development	Subjective Level of Risk
Soil Contamination requiring Remediation for Use	Cost and Time	Low
Risk of Currently Unidentified Contamination (underground infrastructure, asbestos, contaminated soils)	Cost and Time	Low to Moderate (but remaining uncertainty due those areas not investigated due to onsite buildings at the time of the ESA and potential for USTs to remain insitu)
Soil Contamination requiring offsite disposal as part of development	Cost	Low subject to further assessment and some segregation
Potential Groundwater Contamination	Time and Residual Liability	Low to Moderate subject to further groundwater sampling to confirm TRH concentrations flowing offsite. Likelihood for CUTEP determination

The findings of this ESA indicates that the key assessed risk to the potential development associated with contamination is likely to be associated with the resolution of groundwater based on the presence of dissolved phase hydrocarbons in groundwater both at the service station area and in the north east at MW10. The presence of TRH in the downgradient boundary well (MW10) indicates a potential unidentified source which requires further assessment to confirm.

Based on the available information, the impact of the existing contamination on the proposed land use is considered to be low as all of the contaminated fill can be managed for the proposed development. There is a low to moderate risk of finding currently unidentified contamination including asbestos in fill and in subsurface

structures (i.e. pipework) and also unidentified buried infrastructure and potentially other areas of contamination not currently identified due to the presence of onsite buildings at the time of this investigation.

6.3 Strategy to Achieve Environmental Audit

A strategy has been developed for the site that is aimed at further investigating and mitigating the identified contamination risks for the proposed redevelopment of the site for medium to high density residential (i.e. the scope of the ESA report). The site development plans for the site are still to be finalised.

The remediation strategy based on the findings of the ESA is summarised as follows:

- Resample of MW10 for TRH analysis to confirm whether the concentration is present.
- Engagement of an EPA appointed Environmental Auditor;
- Meeting with the Auditor to discuss the outcomes of the ESA, additional site assessment required and the timing of the Audit completion. A potential outcome may be completion of the Audit prior to development but post demolition.
- Develop a workplan for further site assessment activities and provide a program for completion. Further assessment is expected to include:
 - Undertake at least one further groundwater monitoring to confirm that groundwater concentrations at the site.
 - Confirmation of the status of the former underground fuel infrastructure (removed or decommissioned in situ). The GPR methodology to identify underground fuel infrastructure was not successful due to the nature of the underlying subsurface and there is no known demolition/decommissioning report available of the works completed. Further investigation via the removal of concrete hardstanding and excavation of the area (investigation test pits) will be required to visually identify the presence or absence of the former service station infrastructure and further assess the presence of contaminated soils.
 - Targeted soil investigation to assess the features identified as part of this ESA but were not sampled due to the presence of buildings, access constraints and to further delineate the contamination found by this ESA.
 - Installation of additional groundwater wells to delineate the extent of hydrocarbon impacts around MW10 (if required) and MW09.
- Develop a remediation strategy that would include:
 - Removal of the diesel fuel tank to the north of the building and any fuel infrastructure remaining in the wash bay to the east of the building.
 - Demolition of the site buildings and removal of the site hardstands including stockpiling for reuse or removal of the underlying crushed rock;
 - Removal of any redundant asbestos pipes forming part of the former underground services network. In the absence of any underground services plans, this would be assisted through the survey or location (prior to demolition) of all water pipes within the building with confirmation of the material associated with the water pipe feeding the point through excavation of a test pit.
 - If present, all fuel infrastructure and contaminated soil in the area of the former service station shall be removed and validated accordingly.
 - Resolution of residual groundwater and soil vapour issues following source removal in the former service station area.

- Removal of the waste fill/ACM identified in TP11.
- Validation of any other identified remedial works and completion of a contamination validation report would be prepared verifying that the site presents a low contamination risk to the proposed residential use.
- Complete the Environmental Audit. This may require the completion of a Clean up to the Extent Practicable determination by EPA based on the presence of a TRH in groundwater. As part of the audit process, the environmental auditor will need to submit an opinion to EPA for their determination on whether groundwater has been cleaned up to the extent practicable (CUTEP). While this may not involve actual clean-up of groundwater, it will have to be demonstrated to EPA's satisfaction that any clean-up is not practicable.
- If CUTEP is required, further groundwater monitoring events to obtain a sufficient dataset will be required to demonstrate plume stability and risk to existing and future site receptors. Potential management of residual groundwater contamination may be done via the declaration of a groundwater quality restricted use zone (GQRUZ) with a condition of no groundwater abstraction.
- A Site Contamination Management Plan (SCMP) may need to be developed to assist in management of residual contamination that may remain in areas not excavated by the site development. At this stage this risk is considered low; and
- Commence site redevelopment and implement SCMP if required.

7.0 RECOMMENDATIONS

It is recommended that:

- MW10 is resampled for TRH analysis to confirm that the concentration is present;
- An Auditor is appointed to the site;
- The strategy outlined for progressing the site towards Audit and redevelopment as set out in Section 6.3 is refined as required following review by the Auditor and then implemented.

8.0 IMPORTANT INFORMATION

Your attention is drawn to the document titled 'Important Information' which is included in Appendix H of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder has under the contract between it and its client.

9.0 REFERENCES

Golder Associates Pty Ltd 2018, Contamination Due Diligence Review, 8 – 14 Thompson Road, North Geelong, Victoria, 26 November 2018

Senversa Pty Ltd (2018a), Due Diligence Site Contamination Assessment, 8-14 Thompson Road, North Geelong, Victoria for Knight Frank Australia Pty Ltd, 8 October 2018

Senversa Pty Ltd (2018b), Site Contamination Investigation, 8-14 Thompson Road, North Geelong, Victoria for Knight Frank Australia Pty Ltd, 16 November 2018

Visualising Victoria's Groundwater Database: https://www.vvg.org.au/vvg_map.php#

Victorian Background Soil Database: <https://soilexplorer.eres.rmit.edu.au/soil-explorer/>

Signature Page

Golder Associates Pty Ltd



Libby Kiernan
Senior Environmental Scientist



Ian Kluckow
Principal

DAF_LK/IK

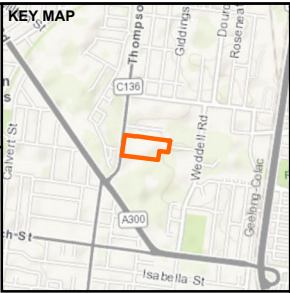
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Figures

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LEGEND
[Orange Outline] Site Boundary



NOTE(S)
1. PROJECTION: GDA 1994 MGA ZONE 55.

REFERENCE(S)
1. KEY MAP SOURCED FROM ESRI ONLINE BASEMAPS.
2. IMAGERY SOURCED FROM NEARMAP.COM, DATE OF CAPTURE 25/02/2019.
3. ROAD & PROPERTY DATA © THE STATE OF VICTORIA, DEPARTMENT OF ENVIRONMENT,

CLIENT
LEAF CORPORATION

PROJECT
8-14 THOMPSON ROAD, NORTH GEELONG

TITLE
SITE LOCATION PLAN

CONSULTANT	YYYY-MM-DD	2019-05-14
DESIGNED	-	
PREPARED	CJS/LMA	
REVIEWED	####	
APPROVED	####	

PROJECT NO. 18113054	CONTROL 005	REV. 0	FIGURE 1

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



LEGEND
Golder Location (2019)
◆ Borehole
■ Groundwater Well
✚ Test Pit
Senversa Location (2018)
■ Borehole
■ Groundwater Well
▭ Site Boundary
▨ Former Service Station
▨ Former Refueling, washdown area and potential former UST
▨ Diesel storage and backup generator

NOTE(S)
1. PROJECTION: GDA 1994 MGA ZONE 55.

REFERENCE(S)
1. KEY MAP SOURCED FROM ESRI ONLINE BASEMAPS.
2. IMAGERY SOURCED FROM NEARMAP.COM, DATE OF CAPTURE 25/02/2019.
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PROJECT
8-14 THOMPSON ROAD, NORTH GEELONG

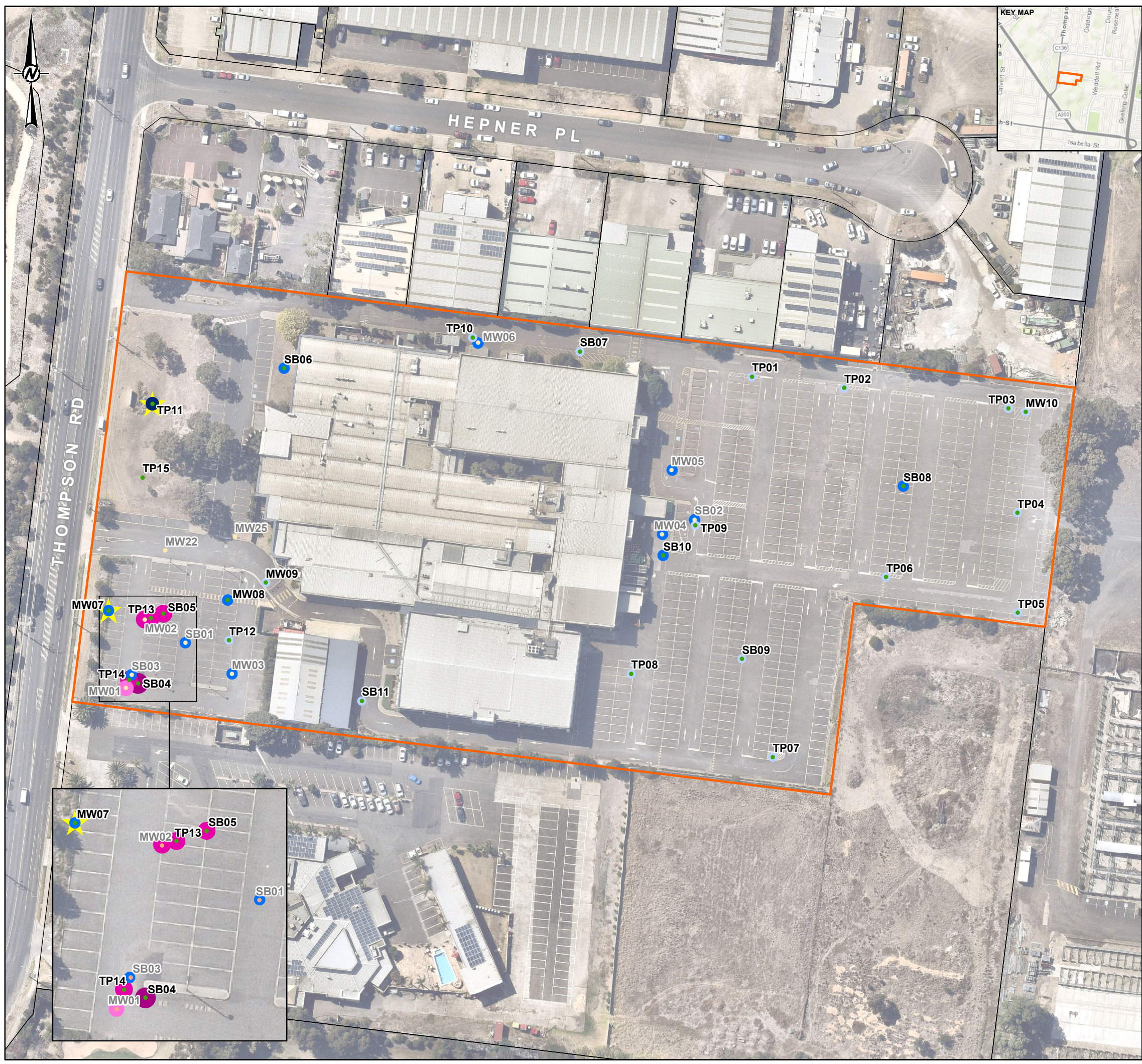
TITLE
INVESTIGATION LOCATIONS AND POTENTIAL CONTAMINATION SOURCES

CONSULTANT	YYYY-MM-DD	2019-05-14
DESIGNED	-	
PREPARED	CJS/LMA	
REVIEWED	####	
APPROVED	####	

PROJECT NO.	CONTROL	REV.	FIGURE
18113054	005	0	2

25mm

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LEGEND

Golder Location (2019)

- Golder Location (2019)

Sensversa Location (2018)

- Sensversa Location (2018)

Inferred Fill Depth (m)

- < 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2
- 2.0 - 3.0
- > 3.0

★ ACM observed

Site Boundary

NOTE(S)

1. PROJECTION: GDA 1994 MGA ZONE 55.

REFERENCE(S)

1. KEY MAP SOURCED FROM ESRI ONLINE BASEMAPS.
2. IMAGERY SOURCED FROM NEARMAP.COM, DATE OF CAPTURE 25/02/2019.
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PROJECT

8-14 THOMPSON ROAD, NORTH GEELONG

TITLE

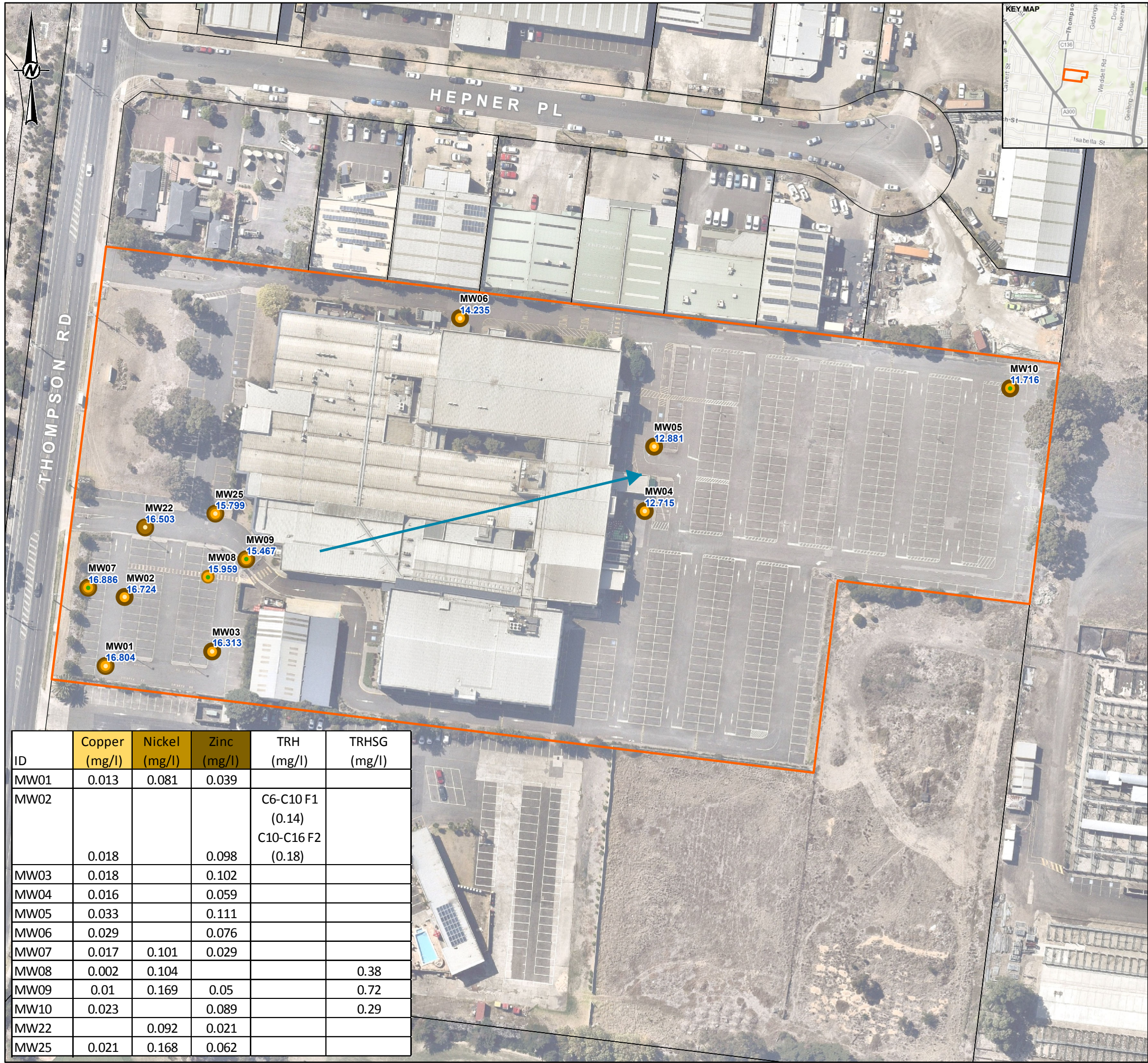
FILL DEPTH AND ACM OBSERVATIONS

CONSULTANT	YYYY-MM-DD	2019-05-14
	DESIGNED	-
	PREPARED	CJS/LMA
	REVIEWED	####
	APPROVED	####

PROJECT NO.	CONTROL	REV.	FIGURE
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LEGEND

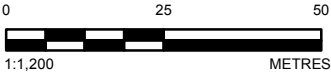
- Groundwater Well (Golder Installed)
- Groundwater Well (Sensversa Installed)

Exceedance of ANZECC 2000 Marine 95%

- Copper (0.0013 mg/l)
- Nickel (0.07 mg/l)
- Zinc (0.015 mg/l)
- TRH - Total Recoverable Hydrocarbons
- TRHSG - Total Recoverable Hydrocarbons post silica gel clean up

LEGEND

- Flow Direction
- Site Boundary



NOTE(S)

1. PROJECTION: GDA 1994 MGA ZONE 55.

REFERENCE(S)

1. KEY MAP SOURCED FROM ESRI ONLINE BASEMAPS.
2. IMAGERY SOURCED FROM NEARMAP.COM, DATE OF CAPTURE 25/02/2019.
3. ROAD & PROPERTY DATA © THE STATE OF VICTORIA, DEPARTMENT OF ENVIRONMENT,

CLIENT

LEAF CORPORATION

PROJECT

8-14 THOMPSON ROAD, NORTH GEELONG

TITLE

GROUNDWATER EXCEEDANCES, TRH CONCENTRATION OBSERVATIONS AND INFERRED GROUNDWATER FLOW

CONSULTANT	YYYY-MM-DD	2019-05-14
	DESIGNED	-
	PREPARED	JPH
	REVIEWED	####
	APPROVED	####

PROJECT NO.	CONTROL	REV.	FIGURE
18113054	005	0	4

APPENDIX A

**Borehole, Test Pit Logs,
Groundwater Well Installation
Details**



GOLDER

REPORT OF BOREHOLE: MW07

CLIENT: Leaf Corporation
PROJECT: Due Diligence
LOCATION: 8-14 Thompson Road, North Geelong
JOB NO: 18113054

COORDS: MGA94 55
SURFACE RL: DATUM: AHD
INCLINATION: -90°
HOLE DIA: 150 mm HOLE DEPTH: 7.00 m

SHEET: 1 OF 1
DRILL RIG: Geoprobe
CONTRACTOR: Star Drilling
LOGGED: DAF DATE: 28/3/19
CHECKED: LK DATE: 8/5/19

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			0						FILL: Silty Sandy CLAY low plasticity, brown, fine to medium grained sand, with medium to coarse sub-angular gravel (15-40mm)	D	
			1.00		MW07/2001 0.50-0.60 m R = 0A PID = 0 ppm						
			1.60		MW07/2002 1.00-1.10 m R = 0A PID = 0.8 ppm				Sandy CLAY high plasticity, brown, fine grained sand, trace organics (decayed wood)		
			2						CLAY high plasticity, grey		
			2.50		MW07/2003 2.40-2.50 m R = 0A PID = 1.4 ppm				SAND high plasticity, grey	D - M	
			2.80						Sandy CLAY medium plasticity, grey, medium grained sand		St
			2.90						Clayey SAND medium grained, orange/brown		
			3.00						Sandy CLAY low plasticity, grey, fine grained sand		
			3.20		MW07/2004 3.00-3.10 m R = 0A PID = 0.5 ppm				Clayey SAND medium grained, grey	D	
			3.40						SAND medium grained, orange/brown, with some clay	D - M	
PT			3.50						Clayey SAND fine to medium grained, grey	M - W	
			3.60						Sandy CLAY medium plasticity, grey	D	
			3.80						SAND fine grained, white/grey		
			3.95						medium grained, orange		
			4						Sandy CLAY medium to high plasticity, brown, fine grained sand, with some silt		
			4.15						GRAVEL fine to medium grained, sub-angular		
			4.40		MW07/2005 4.30-4.40 m R = 0A PID = 1 ppm				SAND medium grained, orange/grey	M - W	
					MW07/2006 4.80-4.90 m R = 0A PID = 1.4 ppm				black/grey, fine to medium grained		
									SAND cemented (Calcite), fine to medium grained, white/grey		
									CLAY high plasticity, orange/brown		
			7		MW07/2007 6.50-6.60 m R = 0A PID = 0.9 ppm						
									END OF BOREHOLE @ 7.00 m TARGET DEPTH		
			8								
			9								
			10								

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF STANDPIPE INSTALLATION: MW07

SHEET: 1 OF 1

DRILL RIG: Geoprobe

CONTRACTOR: Star Drilling

LOGGED: DAF DATE: 28/3/19

CHECKED: LK DATE: 8/5/19

CLIENT: Leaf Corporation

COORDS: MGA94 55

PROJECT: Due Diligence

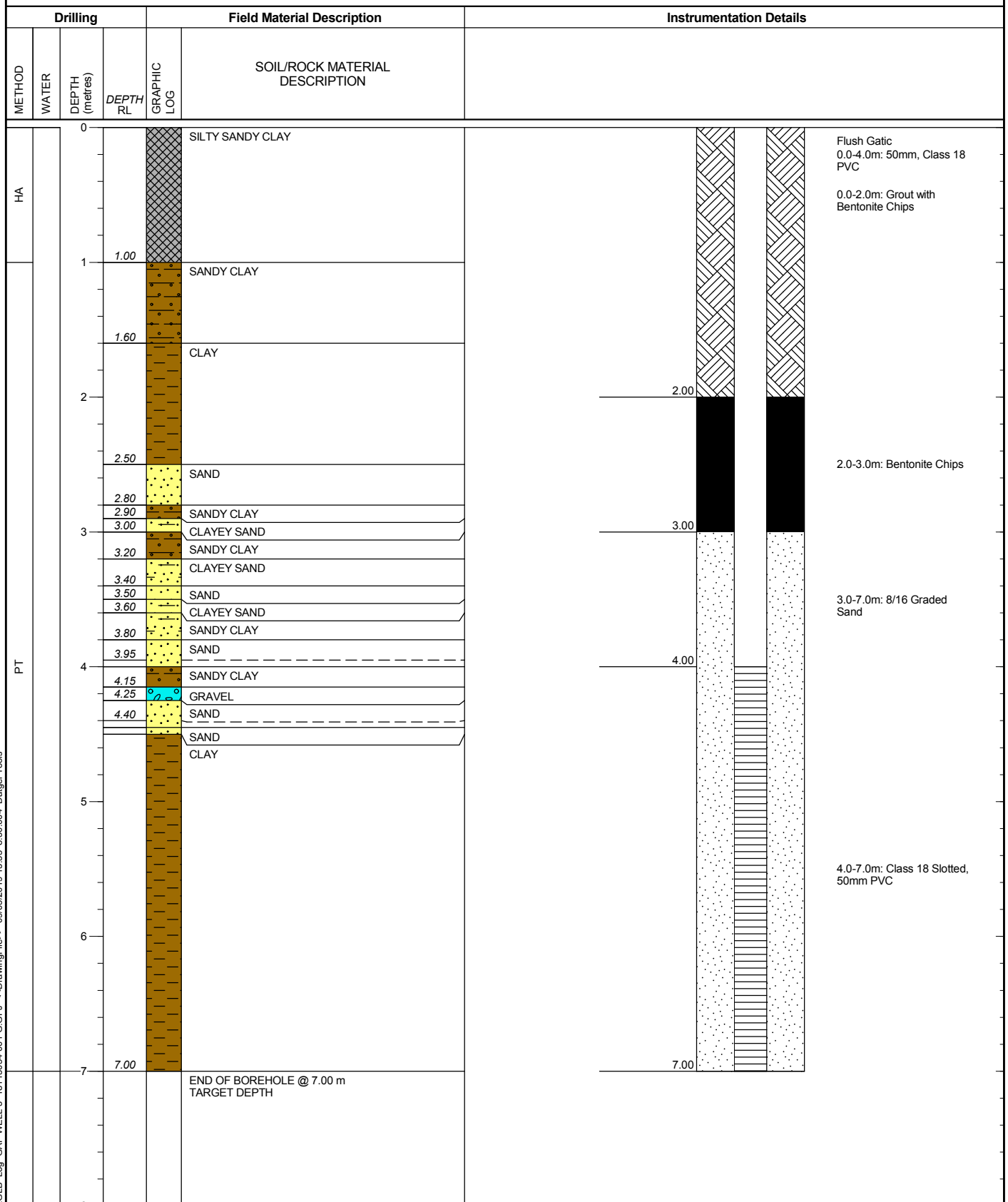
SURFACE RL: DATUM: AHD

LOCATION: 8-14 Thompson Road, North Geelong

INCLINATION: -90°

JOB NO: 18113054

HOLE DIA: 150 mm HOLE DEPTH: 7.00 m



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: MW08

SHEET: 1 OF 1

DRILL RIG: Geoprobe

CONTRACTOR: Star Drilling

LOGGED: DAF DATE: 28/3/19

CHECKED: LK DATE: 8/5/19

CLIENT: Leaf Corporation

COORDS: MGA94 55

PROJECT: Due Diligence

SURFACE RL: DATUM: AHD

LOCATION: 8-14 Thompson Road, North Geelong

INCLINATION: -90°

JOB NO: 18113054

HOLE DIA: 150 mm HOLE DEPTH: 7.00 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
HA			0						ASPHALT			
			0.30						FILL: Sandy GRAVEL medium to coarse grained (15-40mm), grey/black			
			0.70		MW08/2001 MW08/2701 0.40-0.50 m R = 0A PID = 0.6 ppm				FILL: Gravelly CLAY high plasticity, brown, medium to coarse gravel (15-40mm)	D		
			1						Sandy CLAY high plasticity, brown/grey, with some silt			
			1.20						trace fine to coarse grained, sub-angular gravel (basalt)	D - M		
			1.95									
			2						Clayey SAND medium grained, white/grey			
			2.30		MW08/2002 2.30-2.40 m R = 0A PID = 0.7 ppm				Silty SAND fine to medium grained, white/grey			
			2.90									
			3						orange/brown	D		
PT			3.05						Silty Sandy CLAY medium to high plasticity, red/brown, fine to medium grained sand, trace gravel, fine grained, red/brown, sub-angular (10mm) (inferred iron deposits)			
			3.20									
			3.35						SAND fine grained, orange/brown			
			3.55						Slag And CLAY medium plasticity, orange/brown, fine grained sand			
			3.65						SAND fine grained, orange/brown			
			3.85						SAND fine grained, orange/brown			
			4						SAND fine grained, orange/brown			
			4.10						Sandy CLAY medium to high plasticity, orange/brown, fine grained sand, trace silt			
			4.30									
			4.50									
		4.70										
		4.95		MW08/2003 4.85-4.95 m R = 2C PID = 18.5 ppm				SAND fine grained, white/grey	D - M			
								Slag And CLAY high plasticity, grey, fine grained sand				
		5		MW08/2004 5.15-5.25 m R = 2C PID = 25.5 ppm				SAND fine grained, grey				
		5.50		MW08/2005 5.60-5.70 m R = 0C PID = 7.4 ppm				Sandy CLAY medium plasticity, brown, fine grained sand				
		5.80		MW08/2006 6.00-6.10 m R = 0B PID = 1.7 ppm				SAND medium grained, grey	M - W			
								Sandy CLAY high plasticity, brown, fine grained sand				
								SAND coarse grained, sub-rounded, brown, trace iron deposits				
								Clayey SAND fine to medium grained, dark brown/black				
			7									
									SAND cemented (Calcite), fine to medium grained, white/grey			
									SAND medium to coarse grained, brown			
									Silty CLAY high plasticity, brown/black			
									Clayey SAND fine grained, brown/black			
									medium gravel			
									CLAY medium plasticity, orange/brown			
									END OF BOREHOLE @ 7.00 m TARGET DEPTH			
			8									
			9									
			10									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01a
RL3



CHECKED: LK DATE: 8/5/19

HOLE DIA: 150 mm HOLE DEPTH: 7.00 m

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: MW09

CLIENT: Leaf Corporation
PROJECT: Due Diligence
LOCATION: 8-14 Thompson Road, North Geelong
JOB NO: 18113054

COORDS: MGA94 55
SURFACE RL: DATUM: AHD
INCLINATION: -90°
HOLE DIA: 150 mm HOLE DEPTH: 7.00 m

SHEET: 1 OF 1
DRILL RIG: Geoprobe
CONTRACTOR: Star Drilling
LOGGED: DAF DATE: 29/3/19
CHECKED: LK DATE: 8/5/19

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			0					ASPHALT		
			0.50		MW09/2001			FILL: Sandy GRAVEL medium to coarse grained (15-30mm), black/grey		
			0.75		MW09/2801			CLAY high plasticity, dark grey, with trace organics		
			1.05		MW09/2901 0.40-0.50 m R = 0A PID = 0.8 ppm			Sandy CLAY medium to high plasticity, orange/brown, fine grained sand, trace organics (rootlets, grasses)		
			1.50					10mm layers of Clayey SAND and Sandy CLAY, orange/brown, fine grained sand		
			1.90					CLAY high plasticity, grey	St	
			2.00							
			2.20					SAND fine grained, grey		
			2.70					orange/brown		
			2.70					Sandy CLAY low plasticity, orange/brown, fine grained	D	
PT			3.10					SAND fine to medium grained, orange/brown		
			3.40					medium gravel (iron deposits)		
			3.50					Sandy CLAY low plasticity, orange/brown		
			3.70					Clayey SAND fine grained, grey		
			4.10					Sandy CLAY high plasticity, brown		
			4.25		MW09/2002 4.00-4.10 m R = 0A PID = 2.8 ppm			SAND fine grained, grey	F	
			4.85					Sandy CLAY medium plasticity, brown, fine grained sand		
			5.20		MW09/2003 4.90-5.00 m R = 1B PID = 4.4 ppm			SAND fine to medium grained, orange/brown		
			5.20		MW09/2004 5.30-5.40 m R = 0A PID = 5 ppm			SAND cemented (Calcite), fine to medium grained, white/grey	D - M	mild hydrocarbon odour @ 4.95m
								SAND fine to medium grained, orange/yellow/grey layers (bands)		
								dark red/purple		
								Sandy GRAVEL fine to medium grained (5-15mm), angular, brown		
								SAND medium grained, black	M - W	
								Sandy CLAY low plasticity, orange/brown, fine to medium grained sand	S	
								fine grained		
								END OF BOREHOLE @ 7.00 m TARGET DEPTH		
			8							
			9							
			10							

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01a
RL3



CHECKED: LK DATE: 8/5/19

HOLE DIA: 150 mm HOLE DEPTH: 7.00 m

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: MW10

CLIENT: Leaf Corporation
PROJECT: Due Diligence
LOCATION: 8-14 Thompson Road, North Geelong
JOB NO: 18113054

COORDS: MGA94 55
SURFACE RL: DATUM: AHD
INCLINATION: -90°
HOLE DIA: 150 mm HOLE DEPTH: 7.00 m

SHEET: 1 OF 1
DRILL RIG: Geoprobe
CONTRACTOR: Star Drilling
LOGGED: DAF DATE: 28/3/19
CHECKED: LK DATE: 8/5/19

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			0		MW10/2001 0.30-0.40 m R = 0A PID = 1.3 ppm				ASPHALT			
			0.35				FILL: Sandy GRAVEL fine to medium grained (15-40mm), sub-angular, grey/black, fine to medium sand Sandy CLAY high plasticity, brown, fine grained sand					
PT			1		MW10/2002 3.90-4.00 m R = 0A PID = 0.2 ppm					D F - St		refusal with push tube @ 4.0m on compacted sand
			1.40									
			2				SAND fine grained, orange/brown					
			2.75				medium grained					
			3				fine grained					
			3.30				fine to medium grained					
			3.60				Sandy CLAY medium plasticity, orange/brown, fine to medium grained sand, trace gravel, medium grained, sub-rounded (15mm)					
			4				SAND fine to medium grained, sub-rounded to sub-angular, brown/orange					
			4.40				Sandy CLAY high plasticity, orange/brown					
			5									
			6		MW10/2003 6.00-6.10 m R = 0A PID = 0.6 ppm					M - W	S	
			7						END OF BOREHOLE @ 7.00 m TARGET DEPTH			
			8									
			9									
			10									

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF STANDPIPE INSTALLATION: MW10

SHEET: 1 OF 1

DRILL RIG: Geoprobe

CONTRACTOR: Star Drilling

LOGGED: DAF DATE: 28/3/19

CHECKED: LK DATE: 8/5/19

CLIENT: Leaf Corporation

COORDS: MGA94 55

PROJECT: Due Diligence

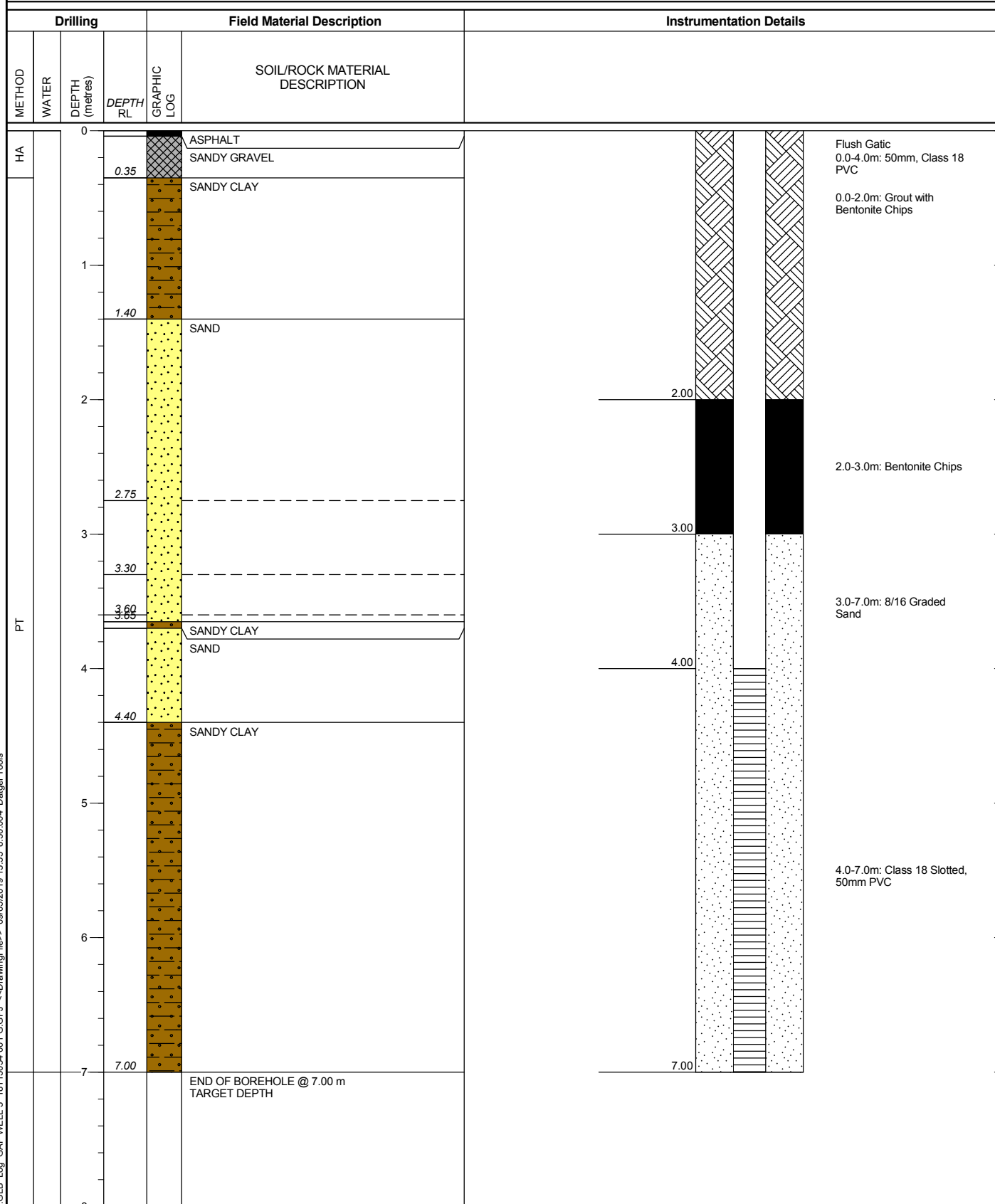
SURFACE RL: DATUM: AHD

LOCATION: 8-14 Thompson Road, North Geelong

INCLINATION: -90°

JOB NO: 18113054

HOLE DIA: 150 mm HOLE DEPTH: 7.00 m



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: SB04

SHEET: 1 OF 1

DRILL RIG: Geoprobe

CONTRACTOR: Star Drilling

LOGGED: DAF DATE: 29/3/19

CHECKED: LK DATE: 8/5/19

CLIENT: Leaf Corporation

COORDS: MGA94 55

PROJECT: Due Diligence

SURFACE RL: DATUM: AHD

LOCATION: 8-14 Thompson Road, North Geelong

INCLINATION: -90°

JOB NO: 18113054

HOLE DEPTH: 4.00 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	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA			0					ASPHALT		
			0.35					FILL: Gravelly SAND medium to coarse grained (5-40mm), grey, medium grained sand		
			0.45					FILL: Sandy CLAY high plasticity, brown/black, fine grained sand		
			0.75					FILL: Clayey SAND fine to medium grained, orange/brown with gravel, medium to coarse grained (5-40mm)		
PT			1		SB04/2001 1.00-1.10 m R = 0A PID = 4.3 ppm			FILL: Sandy CLAY medium to high plasticity, dark brown, fine grained sand, with gravel, medium to coarse grained (5-40mm)		
			2						D	
			3		SB04/2002 2.40-2.50 m R = 0A PID = 1.8 ppm					
			3.20					Clayey SAND fine grained, grey		
			3.35					Sandy CLAY medium plasticity, brown/orange, fine grained sand		
			3.70		SB04/2003 3.70-3.80 m R = 0A PID = 1.8 ppm			Clayey SAND fine grained, grey	D - M	
			4					SAND fine grained, grey		
			5					END OF BOREHOLE @ 4.00 m TARGET DEPTH		
			6							
			7							
			8							
			9							
			10							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: SB05

CLIENT: Leaf Corporation
PROJECT: Due Diligence
LOCATION: 8-14 Thompson Road, North Geelong
JOB NO: 18113054

COORDS: MGA94 55
SURFACE RL: DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.50 m

SHEET: 1 OF 1
DRILL RIG: Geoprobe
CONTRACTOR: Star Drilling
LOGGED: DAF
CHECKED: LK
DATE: 29/3/19
DATE: 8/5/19

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			0						ASPHALT				
			0.40		SB05/2001 0.45-0.55 m R = 1A PID = 2.4 ppm				FILL: Sandy GRAVEL medium to coarse grained (10-30mm), grey				
			1						FILL: Sandy CLAY high plasticity, brown, fine grained sand with gravel, medium to coarse grained (5-40mm), angular to sub-angular, trace concrete and red brick fragments				
			2		SB05/2002 1.80-1.90 m R = 1A PID = 4.4 ppm								
			2.05										
			2.40		SB05/2003 2.20-2.30 m R = 0A PID = 2.2 ppm				Sandy CLAY high plasticity, grey, fine grained sand				
			2.50						Clayey SAND fine grained, white/grey				
			2.80						SAND fine to medium grained, orange/brown				
			3						Sandy CLAY medium plasticity, orange/brown, fine grained sand				
			3.00						Clayey SAND fine grained, grey				
PT			3.25						Sandy CLAY medium plasticity, orange/brown, fine grained sand				
			3.35						SAND fine grained, orange				
			4						pale grey				
			5						END OF BOREHOLE @ 3.50 m TARGET DEPTH				
			6										
			7										
			8										
			9										
			10										

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: SB06

CLIENT: Leaf Corporation
PROJECT: Due Diligence
LOCATION: 8-14 Thompson Road, North Geelong
JOB NO: 18113054

COORDS: MGA94 55
SURFACE RL: DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 2.00 m

SHEET: 1 OF 1
DRILL RIG: Geoprobe
CONTRACTOR: Star Drilling
LOGGED: DAF
CHECKED: LK
DATE: 29/3/19
DATE: 8/5/19

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			0						FILL: Silty CLAY low to medium plasticity, brown, trace gravel, sub-rounded, medium grained		
			0.65		SB06/2001 0.30-0.40 m R = 0A PID = 0.5 ppm						
PT			1		SB06/2002 0.80-0.90 m R = 0A PID = 0.6 ppm				Sandy CLAY fine to medium grained, brown/orange, with trace organics	D	
			1.75								
			1.95						Clayey SAND fine grained, orange/brown		
			2						SAND fine grained, orange/brown END OF BOREHOLE @ 2.00 m TARGET DEPTH		
			3								
			4								
			5								
			6								
			7								
			8								
			9								
			10								

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01a
RL3



CHECKED: LK DATE: 8/5/19

HOLE DEPTH: 2.00 m

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: SB08

CLIENT: Leaf Corporation
PROJECT: Due Diligence
LOCATION: 8-14 Thompson Road, North Geelong
JOB NO: 18113054

COORDS: MGA94 55
SURFACE RL: DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 2.00 m

SHEET: 1 OF 1
DRILL RIG: Geoprobe
CONTRACTOR: Star Drilling
LOGGED: DAF
CHECKED: LK
DATE: 28/3/19
DATE: 8/5/19

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			0						ASPHALT		
			0.55		SB08/2001 0.50-0.60 m R = 0A PID = 0.2 ppm				FILL: Sandy GRAVEL medium to coarse grained (15-40mm), grey/black		
			1						Sandy CLAY medium to high plasticity, orange/brown		
PT			1.20						Clayey SAND medium grained, rounded, orange		
			1.40						Sandy CLAY low plasticity, brown/orange, fine grained sand		
			1.70						Clayey SAND medium grained, orange/brown		
			1.90						SAND fine grained, orange/brown		
			2						END OF BOREHOLE @ 2.00 m TARGET DEPTH		
			3								
			4								
			5								
			6								
			7								
			8								
			9								
			10								

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: SB09

SHEET: 1 OF 1

DRILL RIG: Geoprobe

CONTRACTOR: Star Drilling

LOGGED: DAF DATE: 29/3/19

CHECKED: LK DATE: 8/5/19

CLIENT: Leaf Corporation

COORDS: MGA94 55

PROJECT: Due Diligence

SURFACE RL: DATUM: AHD

LOCATION: 8-14 Thompson Road, North Geelong

INCLINATION: -90°

JOB NO: 18113054

HOLE DEPTH: 2.00 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
HA			0		SB09/2001 0.20-0.30 m R = 0A PID = 1 ppm				ASPHALT	D			
			0.40				FILL: Sandy GRAVEL coarse grained (20-30mm), black/grey						
PT		1	0.80						FILL: SAND fine to medium grained, grey		F		
			1.30				Sandy CLAY high plasticity, brown yellow/brown, sand increasing with depth	D - M					
			1.60				iron inclusions (gravel)	St					
		2						SAND fine grained, grey					
									END OF BOREHOLE @ 2.00 m TARGET DEPTH				
			3										
			4										
			5										
			6										
			7										
			8										
			9										
			10										

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: SB10

SHEET: 1 OF 1

DRILL RIG: Geoprobe

CONTRACTOR: Star Drilling

LOGGED: DAF DATE: 29/3/19

CHECKED: LK DATE: 8/5/19

CLIENT: Leaf Corporation

COORDS: MGA94 55

PROJECT: Due Diligence

SURFACE RL: DATUM: AHD

LOCATION: 8-14 Thompson Road, North Geelong

INCLINATION: -90°

JOB NO: 18113054

HOLE DEPTH: 2.00 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
HA			0						ASPHALT	D			
			0.25						FILL: Sandy GRAVEL				
			0.45		SB10/2001 SB10/2801				medium to coarse grained (20-40mm), grey/black				
			0.55		SB10/2901				FILL: Sandy CLAY				
			0.80		0.30-0.40 m R = 0A PID = 0.7 ppm				high plasticity, brown, fine grained sand, trace fine grained, sub-angular gravel				
			1						FILL: Clayey SAND				
			1.40		SB10/2002				fine grained, grey	D - M			
			1.70		1.20-1.30 m R = 0A PID = 0.2 ppm				Sandy CLAY				
									medium to high plasticity, brown, fine grained				
									medium plasticity, yellow/brown				
			2						Silty CLAY				
									high plasticity, pale brown				
									Sandy CLAY				
									low to medium plasticity, orange/brown with fine to medium grained gravel (iron deposits inferred)				
									END OF BOREHOLE @ 2.00 m TARGET DEPTH				
			3										
			4										
			5										
			6										
			7										
			8										
			9										
			10										

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: SB11

SHEET: 1 OF 1

DRILL RIG: Geoprobe

CONTRACTOR: Star Drilling

LOGGED: DAF DATE: 29/3/19

CHECKED: LK DATE: 8/5/19

CLIENT: Leaf Corporation

COORDS: MGA94 55

PROJECT: Due Diligence

SURFACE RL: DATUM: AHD

LOCATION: 8-14 Thompson Road, North Geelong

INCLINATION: -90°

JOB NO: 18113054

HOLE DEPTH: 2.00 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
HA			0						ASPHALT				
			0.45		SB11/2001 0.30-0.40 m R = 0A PID = 1.8 ppm				FILL: Sandy GRAVEL medium to coarse grained (15-40mm), grey				
PT			0.70		SB11/2002 0.60-0.70 m R = 0A PID = 2.5 ppm				FILL: SAND fine to medium grained, grey				
			1						Sandy CLAY medium plasticity, brown/grey, fine grained				
			1.80						brown sand increasing with depth to 1.6m				
			2						SAND fine grained, white/grey				
									END OF BOREHOLE @ 2.00 m TARGET DEPTH				
			3										
			4										
			5										
			6										
			7										
			8										
			9										
			10										

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF TEST PIT: TP01

CLIENT: Leaf Corporation

PROJECT: Due Diligence

LOCATION: 8-14 Thompson Road, North Geelong

JOB NO: 18113054

COORDS: MGA94 55

SURFACE RL: DATUM: AHD

PIT DEPTH: 0.90 m

BUCKET TYPE:

SHEET: 1 OF 1

MACHINE: 4T Excavator

CONTRACTOR: Dracon

LOGGED: DAF DATE: 25/3/19

CHECKED: LK DATE: 8/5/19

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION 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
EX			0.0						ASPHALT	D	
			0.25		TP01/2001 0.10-0.20 m R = 0A PID = 1.2 ppm				FILL: Sandy GRAVEL angular, medium (average 20mm), loose, grey	L	
			0.5		TP01/2002 0.40-0.50 m R = 0A PID = 1.4 ppm				Sandy CLAY medium to high plasticity, orange/brown, fine grained	D - M F	
			1.0						TEST PIT DISCONTINUED @ 0.90 m		
			1.5								
			2.0								
			2.5								
			3.0								
			3.5								
			4.0								
			4.5								
			5.0								

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP02

CLIENT: Leaf Corporation

PROJECT: Due Diligence

LOCATION: 8-14 Thompson Road, North Geelong

JOB NO: 18113054

COORDS: MGA94 55

SURFACE RL: DATUM: AHD

PIT DEPTH: 0.80 m

BUCKET TYPE:

SHEET: 1 OF 1

MACHINE: 4T Excavator

CONTRACTOR: Dracon

LOGGED: DAF DATE: 25/3/19

CHECKED: LK DATE: 8/5/19

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION 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
EX			0.0						ASPHALT	D		
			0.05						FILL: Sandy GRAVEL angular, medium (average 20mm), loose, dark grey angular, coarse (up to 80mm), loose, dark grey		L - MD	
			0.15									
			0.25		TP02/2001 0.15-0.25 m R = 0A PID = 1.4 ppm							
			0.35						Sandy CLAY with rounded gravel (fine grained, approximately 5mm diameter), medium plasticity, orange/brown, with red mottling, medium grained sand	D - M	St	
			0.5		TP02/2002 0.40-0.50 m R = 0A PID = 1 ppm				Sandy Silty CLAY medium to high plasticity, yellow/brown, trace fine grained rounded gravel, trace decayed organics (roots)			
			1.0						TEST PIT DISCONTINUED @ 0.80 m			
			1.5									
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP03

CLIENT: Leaf Corporation

PROJECT: Due Diligence

LOCATION: 8-14 Thompson Road, North Geelong

JOB NO: 18113054

COORDS: MGA94 55

SURFACE RL: DATUM: AHD

PIT DEPTH: 0.85 m

BUCKET TYPE:

SHEET: 1 OF 1

MACHINE: 4T Excavator

CONTRACTOR: Dracon

LOGGED: DAF DATE: 25/3/19

CHECKED: LK DATE: 8/5/19

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION 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
EX			0.0						ASPHALT	D		
			0.05						FILL: Sandy GRAVEL			
			0.15		TP03/2001				angular, medium (average 20mm), loose, dark grey			
			0.30		R = 0A				FILL: Gravelly SAND		L	
			0.45		PID = 0.4 ppm				medium to coarse, brown, angular, coarse to very coarse gravel (up to 75mm)			
		0.5		TP03/2002					FILL: Clayey SAND	D - M		
				0.35-0.45 m					medium to coarse, pale brown, low plasticity, with trace sub-angular medium gravel (up to 15mm)			
				R = 0A					Sandy CLAY	St		
				PID = 1.2 ppm					medium to high plasticity, orange/red/brown			
				TP03/2003								
				0.60-0.70 m								
				R = 0A								
				PID = 0.7 ppm								
			1.0						TEST PIT DISCONTINUED @ 0.85 m			
			1.5									
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP04

CLIENT: Leaf Corporation

PROJECT: Due Diligence

LOCATION: 8-14 Thompson Road, North Geelong

JOB NO: 18113054

COORDS: MGA94 55

SURFACE RL: DATUM: AHD

PIT DEPTH: 0.80 m

BUCKET TYPE:

SHEET: 1 OF 1

MACHINE: 4T Excavator

CONTRACTOR: Dracon

LOGGED: DAF DATE: 25/3/19

CHECKED: LK DATE: 8/5/19

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION 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
EX			0.0						ASPHALT	D		
			0.06						FILL: Sandy GRAVEL angular, medium (up to 20mm), loose, dark grey coarse to very coarse gravel, up to 90mm length			
			0.15		TP04/2001 0.10-0.20 m R = 0A PID = 0.6 ppm					L		
			0.25		TP04/2002 0.30-0.40 m R = 0A PID = 0.8 ppm			Sandy CLAY medium to high plasticity, orange/brown, with red mottling		D - M	St	
			0.5									
			1.0						TEST PIT DISCONTINUED @ 0.80 m			
			1.5									
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP05

CLIENT: Leaf Corporation

PROJECT: Due Diligence

LOCATION: 8-14 Thompson Road, North Geelong

JOB NO: 18113054

COORDS: MGA94 55

SURFACE RL: DATUM: AHD

PIT DEPTH: 0.90 m

BUCKET TYPE:

SHEET: 1 OF 1

MACHINE: 4T Excavator

CONTRACTOR: Dracon

LOGGED: DAF DATE: 25/3/19

CHECKED: LK DATE: 8/5/19

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION 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
EX			0.0						ASPHALT	D	
			0.06						FILL: Sandy GRAVEL angular, medium (20mm), loose, grey	L	
			0.25		TP05/2001 0.15-0.25 m R = 0A PID = 1.2 ppm				coarse to very coarse gravel (up to 90mm)		
			0.35		TP05/2002 0.40-0.50 m R = 0A PID = 1.2 ppm				Sandy CLAY high plasticity, orange/red, trace organics (fine rootlets)	D - M St	
			0.5								
			1.0						TEST PIT DISCONTINUED @ 0.90 m		
			1.5								
			2.0								
			2.5								
			3.0								
			3.5								
			4.0								
			4.5								
			5.0								

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GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP06

CLIENT: Leaf Corporation

PROJECT: Due Diligence

LOCATION: 8-14 Thompson Road, North Geelong

JOB NO: 18113054

COORDS: MGA94 55

SURFACE RL: DATUM: AHD

PIT DEPTH: 0.95 m

BUCKET TYPE:

SHEET: 1 OF 1

MACHINE: 4T Excavator

CONTRACTOR: Dracon

LOGGED: DAF DATE: 25/3/19

CHECKED: LK DATE: 8/5/19

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION 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
EX			0.0								
			0.05						ASPHALT	D	
			0.25		TP06/2001 0.20-0.30 m R = 0A PID = 1.4 ppm				FILL: Sandy GRAVEL angular, medium (20mm), loose, grey coarse to very coarse gravel (up to 80mm)	L	
			0.45		TP06/2002 0.50-0.60 m R = 0A PID = 1.8 ppm				Sandy CLAY medium plasticity, dark grey/brown	D - M St	
			1.0						TEST PIT DISCONTINUED @ 0.95 m		
			1.5								
			2.0								
			2.5								
			3.0								
			3.5								
			4.0								
			4.5								
			5.0								

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GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP07

CLIENT: Leaf Corporation

PROJECT: Due Diligence

LOCATION: 8-14 Thompson Road, North Geelong

JOB NO: 18113054

COORDS: MGA94 55

SURFACE RL: DATUM: AHD

PIT DEPTH: 0.85 m

BUCKET TYPE:

SHEET: 1 OF 1

MACHINE: 4T Excavator

CONTRACTOR: Dracon

LOGGED: DAF DATE: 25/3/19

CHECKED: LK DATE: 8/5/19

Excavation				Sampling		Field Material Description							
METHOD	EXCAVATION 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
			0.0		TP07/2001 0.05-0.15 m R = 0A PID = 0.2 ppm TP07/2002 0.30-0.40 m R = 0A PID = 0.6 ppm								

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GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP08

CLIENT: Leaf Corporation

PROJECT: Due Diligence

LOCATION: 8-14 Thompson Road, North Geelong

JOB NO: 18113054

COORDS: MGA94 55

SURFACE RL: DATUM: AHD

PIT DEPTH: 0.75 m

BUCKET TYPE:

SHEET: 1 OF 1

MACHINE: 4T Excavator

CONTRACTOR: Dracon

LOGGED: DAF DATE: 25/3/19

CHECKED: LK DATE: 8/5/19

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION 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
EX			0.0						ASPHALT	D		
			0.15		TP08/2001 0.05-0.15 m R = 0A PID = 1.7 ppm				FILL: Sandy GRAVEL angular, medium (20mm), loose, grey		L	
			0.30		TP08/2002 0.30-0.40 m R = 0A PID = 2.3 ppm				FILL: Clayey SAND fine to medium grained, grey, low plasticity with medium grained rounded gravel (10mm)	D - M		
			0.5						Sandy CLAY medium to high plasticity, yellow/brown		St	
			1.0						TEST PIT DISCONTINUED @ 0.75 m			
			1.5									
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP09

CLIENT: Leaf Corporation

PROJECT: Due Diligence

LOCATION: 8-14 Thompson Road, North Geelong

JOB NO: 18113054

COORDS: MGA94 55

SURFACE RL: DATUM: AHD

PIT DEPTH: 0.75 m

BUCKET TYPE:

SHEET: 1 OF 1

MACHINE: 4T Excavator

CONTRACTOR: Dracon

LOGGED: DAF DATE: 25/3/19

CHECKED: LK DATE: 8/5/19

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION 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
EX			0.0	0.05	TP09/2001 0.05-0.15 m R = 0A PID = 2.1 ppm TP09/2002 0.20-0.30 m R = 0A PID = 0.4 ppm TP09/2003 0.40-0.50 m R = 0A PID = 0.1 ppm				ASPHALT	D		
			0.20						FILL: Sandy GRAVEL angular to sub-angular, medium grained (20mm), dark grey, loose		L	
			0.30						angular gravel up to 80mm			
			0.5						Sandy CLAY medium to high plasticity, orange/brown	D - M	St	
			1.0						TEST PIT DISCONTINUED @ 0.75 m			
			1.5									
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP10

CLIENT: Leaf Corporation

PROJECT: Due Diligence

LOCATION: 8-14 Thompson Road, North Geelong

JOB NO: 18113054

COORDS: MGA94 55

SURFACE RL: DATUM: AHD

PIT DEPTH: 1.10 m

BUCKET TYPE:

SHEET: 1 OF 1

MACHINE: 4T Excavator

CONTRACTOR: Dracon

LOGGED: DAF DATE: 26/3/19

CHECKED: LK DATE: 8/5/19

Excavation					Sampling		Field Material Description						
METHOD	EXCAVATION 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
EX			0.0						ASPHALT	D			
			0.06		TP10/2001 0.05-0.15 m R = 0A				FILL: Sandy GRAVEL sub-angular, medium to coarse (10-50mm), dark grey , loose		L		
			0.20		PID = 0.8 ppm				FILL: Gravelly SAND medium grained, brown, fine gravel (5mm diameter), rounded, loose				
			0.30		TP10/2002 0.20-0.30 m R = 0A				Sandy CLAY high plasticity, orange/brown	D - M	St		
			0.5		PID = 1.2 ppm TP10/2003 0.40-0.50 m R = 0A PID = 1 ppm								
			1.0										
									TEST PIT DISCONTINUED @ 1.10 m				
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										
			4.0										
			4.5										
			5.0										

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP11

CLIENT: Leaf Corporation

PROJECT: Due Diligence

LOCATION: 8-14 Thompson Road, North Geelong

JOB NO: 18113054

COORDS: MGA94 55

SURFACE RL: DATUM: AHD

PIT DEPTH: 1.60 m

BUCKET TYPE:

SHEET: 1 OF 1

MACHINE: 4T Excavator

CONTRACTOR: Dracon

LOGGED: DAF DATE: 26/3/19

CHECKED: LK DATE: 8/5/19

Excavation				Sampling		Field Material Description					
METHOD	EXCAVATION 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
EX			0.0	0.05					GRASS yellow/brown		
			0.15		TP11/2001 0.20-0.30 m R = 2A				FILL: Silty CLAY low plasticity, brown, with organics (fine rootlets), trace sub-rounded medium gravel (10mm), trace plastic waste (pea seed bag)		concrete boulder 200mm x 160mm
			0.5	0.65	TP11/2002 0.50-0.60 m R = 2A PID = 0.4 ppm				FILL: Silty Gravelly CLAY low plasticity, brown, fine to coarse grained, trace concrete and waste (bullet casing, charcoal), asbestos sheeting x 4, trace organics (rootlets)	D	
			1.0	1.10					FILL: Silty CLAY low to medium plasticity, brown, trace organics (decayed wood, rootlets)	St	
			1.5						Silty Sandy CLAY high plasticity, orange/brown	D - M	
									TEST PIT DISCONTINUED @ 1.60 m		
			2.0								
			2.5								
			3.0								
			3.5								
			4.0								
			4.5								
			5.0								

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GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP12

CLIENT: Leaf Corporation
PROJECT: Due Diligence
LOCATION: 8-14 Thompson Road, North Geelong
JOB NO: 18113054

COORDS: MGA94 55
SURFACE RL: DATUM: AHD
PIT DEPTH: 1.70 m
BUCKET TYPE:

SHEET: 1 OF 1
MACHINE: 4T Excavator
CONTRACTOR: Dracon
LOGGED: DAF DATE: 26/3/19
CHECKED: LK DATE: 8/5/19

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION 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
EX			0.0						ASPHALT	D		
			0.25		TP12/2001 0.20-0.30 m R = 0A PID = 2.6 ppm				FILL: Gravelly SAND angular, medium (10-20mm), trace coarse gravel (60 x 30mm), black/grey, loose		MD	
			0.40						FILL: SAND medium grained, grey/black, with gravel, sub-angular, medium grained (10mm diameter)			
			0.5		TP12/2002 0.50-0.60 m R = 0A				Sandy CLAY medium to high plasticity, orange/brown	D - M		
			1.0								St - F	
			1.5									
			2.0						TEST PIT DISCONTINUED @ 1.70 m			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP13

CLIENT: Leaf Corporation
PROJECT: Due Diligence
LOCATION: 8-14 Thompson Road, North Geelong
JOB NO: 18113054

COORDS: MGA94 55
SURFACE RL: DATUM: AHD
PIT DEPTH: 2.90 m
BUCKET TYPE:

SHEET: 1 OF 1
MACHINE: 4T Excavator
CONTRACTOR: Dracon
LOGGED: DAF
CHECKED: LK
DATE: 26/3/19
DATE: 8/5/19

Excavation					Sampling		Field Material Description					
METHOD	EXCAVATION 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
EX			0.0						ASPHALT	D		mild hydrocarbon odour @ 0.75m
			0.30		TP13/2001 0.20-0.30 m R = 0A PID = 2.8 ppm				FILL: Sandy GRAVEL angular to sub-angular, medium to coarse (20-30mm), trace very coarse (70 x 30mm), grey, loose	D - M		
			0.5						GEOFABRIC			
			0.75		TP13/2002 0.75-0.85 m R = 0B PID = 5.3 ppm				FILL: Sandy Gravelly CLAY low plasticity, sub-angular, fine to coarse grain, brown			
			1.0						low plasticity, coarse grained gravel, dark grey			
			1.5							D - M	MD	
			2.0		TP13/2003 1.90-2.00 m R = 0B PID = 4.4 ppm							
			2.20		TP13/2004 2.20-2.30 m R = 0B PID = 1.7 ppm TP13/2005 2.40-2.50 m R = 0A PID = 4.1 ppm				Clayey SAND fine to medium grained, white/grey			
			2.5									
			3.0		TP13/2006 2.90-3.00 m R = 0A				TEST PIT DISCONTINUED @ 2.90 m			
		3.5										
		4.0										
		4.5										
		5.0										

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GAP gINT FN. F01e
RL3



GOLDER

REPORT OF TEST PIT: TP14

CLIENT: Leaf Corporation
PROJECT: Due Diligence
LOCATION: 8-14 Thompson Road, North Geelong
JOB NO: 18113054

COORDS: MGA94 55
SURFACE RL: DATUM: AHD
PIT DEPTH: 3.00 m
BUCKET TYPE:

SHEET: 1 OF 1
MACHINE: 4T Excavator
CONTRACTOR: Dracon
LOGGED: DAF DATE: 26/3/19
CHECKED: LK DATE: 8/5/19

Excavation				Sampling		Field Material Description						
METHOD	EXCAVATION 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
EX			0.0						ASPHALT	D		boulders observed in wall @ 0.8m stabilised sand boulder @ 1.2m (500 x 300 x 300mm)
			0.10						FILL: Silty Gravelly CLAY			
			0.20						low plasticity, grey, medium gravel (20mm)			
			0.40		TP14/2001				low plasticity, grey, coarse gravel (50mm), asphalt and red brick fragments			
			0.45		0.30-0.40 m				FILL: Sandy CLAY			
			0.5		R = 0A				low to medium plasticity, orange/brown with angular to sub-angular coarse grained gravel, some boulders (300mm x 25mm)			
					PID = 0.9 ppm				low to medium plasticity, black/grey with angular gravel, medium to coarse (25mm), trace concrete cobbles (200mm x 150mm)			
			1.0		TP14/2002							
					0.90-1.00 m							
					R = 0A							
				PID = 0.6 ppm								
			1.5		TP14/2003					D - M	MD	
					1.50-1.60 m							
					R = 0A							
					PID = 1.4 ppm							
			2.0									
					TP14/2004							
					2.20-2.30 m							
					R = 0A							
					PID = 3.1 ppm							
			2.5									
					TP14/2005							
					2.90-3.00 m							
					R = 0A							
					PID = 2.2 ppm				TEST PIT DISCONTINUED @ 3.00 m			
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

This report of test pit must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01e
RL3



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 (%)	SPN "N" *
VS	Very Soft	0 to 12 kPa	VL	Very Loose	Less than 15	0 to 4
S	Soft	12 to 25 kPa	L	Loose	15 to 35	4 to 10
F	Firm	25 to 50 kPa	MD	Medium Dense	35 to 65	10 to 30
St	Stiff	50 to 100 kPa	D	Dense	65 to 85	30 to 50
VSt	Very Stiff	100 to 200 kPa	VD	Very Dense	Above 85	Above 50
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.

APPENDIX B

Laboratory Analytical Results

CERTIFICATE OF ANALYSIS

Work Order : **EM1904749**
Client : **GOLDER ASSOCIATES**
Contact : **GOLDER CONTACT**
Address : **P O BOX 6079 Building 7, 570-588 Swan St**
RICHMOND VIC, AUSTRALIA 3122
Telephone : **+61 03 8862 3500**
Project : **18113054**
Order number : **Project Number 18113054**
C-O-C number : **827**
Sampler : **DUNCAN FRASER**
Site : **Geelong**
Quote number : **ME-255-19 - COMPASS**
No. of samples received : **6**
No. of samples analysed : **6**

Page : 1 of 9
Laboratory : Environmental Division Melbourne
Contact : Larissa Burns
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +6138549 9644
Date Samples Received : 02-Apr-2019 14:00
Date Analysis Commenced : 02-Apr-2019
Issue Date : 09-Apr-2019 16:54



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
Arenie Vijayaratnam	Non-metals prep supervisor	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



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.



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW04/50010419	MW05/50010419	MW05/55010419	MW06/50010419	MW25/50020419
Client sampling date / time				01-Apr-2019 14:07	01-Apr-2019 15:10	01-Apr-2019 15:42	01-Apr-2019 16:40	02-Apr-2019 08:58
Compound	CAS Number	LOR	Unit	EM1904749-001	EM1904749-002	EM1904749-003	EM1904749-004	EM1904749-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.64	7.51	6.81	6.77	7.06
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	6800	8410	<10	7290	7400
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	525	640	<1	584	741
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.004	0.006	<0.001	0.002	0.002
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.004	0.002	<0.001	0.004	0.001
Copper	7440-50-8	0.001	mg/L	0.016	0.033	<0.001	0.029	0.021
Nickel	7440-02-0	0.001	mg/L	0.006	0.014	<0.001	0.068	0.168
Lead	7439-92-1	0.001	mg/L	0.001	0.002	<0.001	0.002	0.001
Zinc	7440-66-6	0.005	mg/L	0.059	0.111	<0.005	0.076	0.062
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.05	<0.01	0.02	0.06
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.02	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	9.69	11.9	<0.01	7.42	9.23
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	9.71	11.9	<0.01	7.42	9.23
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	<5	<5	<5
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	<5	<5	<5
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	<5	<5	<5
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	<5	<5	<5
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW04/50010419	MW05/50010419	MW05/55010419	MW06/50010419	MW25/50020419
Client sampling date / time				01-Apr-2019 14:07	01-Apr-2019 15:10	01-Apr-2019 15:42	01-Apr-2019 16:40	02-Apr-2019 08:58
Compound	CAS Number	LOR	Unit	EM1904749-001	EM1904749-002	EM1904749-003	EM1904749-004	EM1904749-005
				Result	Result	Result	Result	Result
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	<50	<50
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW04/50010419	MW05/50010419	MW05/55010419	MW06/50010419	MW25/50020419
Client sampling date / time				01-Apr-2019 14:07	01-Apr-2019 15:10	01-Apr-2019 15:42	01-Apr-2019 16:40	02-Apr-2019 08:58
Compound	CAS Number	LOR	Unit	EM1904749-001	EM1904749-002	EM1904749-003	EM1904749-004	EM1904749-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<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	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<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	<1.0



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW04/50010419	MW05/50010419	MW05/55010419	MW06/50010419	MW25/50020419
Client sampling date / time				01-Apr-2019 14:07	01-Apr-2019 15:10	01-Apr-2019 15:42	01-Apr-2019 16:40	02-Apr-2019 08:58
Compound	CAS Number	LOR	Unit	EM1904749-001	EM1904749-002	EM1904749-003	EM1904749-004	EM1904749-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<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	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<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	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<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	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	97.7	106	95.2	96.6	108



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW04/50010419	MW05/50010419	MW05/55010419	MW06/50010419	MW25/50020419
Client sampling date / time				01-Apr-2019 14:07	01-Apr-2019 15:10	01-Apr-2019 15:42	01-Apr-2019 16:40	02-Apr-2019 08:58
Compound	CAS Number	LOR	Unit	EM1904749-001	EM1904749-002	EM1904749-003	EM1904749-004	EM1904749-005
				Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued								
Toluene-D8	2037-26-5	5	%	98.0	96.1	103	100.0	103
4-Bromofluorobenzene	460-00-4	5	%	89.4	90.6	89.5	90.8	95.3
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	33.0	31.8	32.1	32.0	34.7
2-Chlorophenol-D4	93951-73-6	1.0	%	71.5	69.3	73.6	72.8	81.2
2,4,6-Tribromophenol	118-79-6	1.0	%	93.2	85.3	100	102	114
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	90.8	83.7	75.4	89.3	105
Anthracene-d10	1719-06-8	1.0	%	87.8	80.7	84.1	82.7	93.2
4-Terphenyl-d14	1718-51-0	1.0	%	94.1	79.2	110	86.7	103
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	101	111	98.0	101	113
Toluene-D8	2037-26-5	2	%	93.7	92.0	98.7	95.4	98.5
4-Bromofluorobenzene	460-00-4	2	%	89.2	90.6	96.1	92.5	97.6



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	MW25/57020419	----	----	----	----
Client sampling date / time				02-Apr-2019 10:09	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1904749-006	-----	-----	-----	-----
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	%	96.0	----	----	----	----
Toluene-D8	2037-26-5	2	%	94.2	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	92.4	----	----	----	----



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

QUALITY CONTROL REPORT

Work Order	: EM1904749	Page	: 1 of 12
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Melbourne
Contact	: GOLDER CONTACT	Contact	: Larissa Burns
Address	: P O BOX 6079 Building 7, 570-588 Swan St RICHMOND VIC, AUSTRALIA 3122	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 8862 3500	Telephone	: +6138549 9644
Project	: 18113054	Date Samples Received	: 02-Apr-2019
Order number	: Project Number 18113054	Date Analysis Commenced	: 02-Apr-2019
C-O-C number	: 827	Issue Date	: 09-Apr-2019
Sampler	: DUNCAN FRASER		
Site	: Geelong		
Quote number	: ME-255-19 - COMPASS		
No. of samples received	: 6		
No. of samples analysed	: 6		



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Arenie Vijayaratham	Non-metals prep supervisor	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

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 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

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 2273440)									
EM1904605-027	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.80	5.79	0.172	0% - 20%
EM1904764-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.88	5.96	14.3	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 2274586)									
EM1904685-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1730	1620	6.34	0% - 20%
EM1904752-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1960	1820	6.98	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2273473)									
EM1904764-003	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	807	812	0.609	0% - 20%
EM1904738-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1	<1	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2276117)									
EM1904764-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0008	0.0009	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	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	0.064	0.064	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.010	0.009	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.264	0.266	0.615	0% - 20%
EM1904605-026	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: 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
EG035F: Dissolved Mercury by FIMS (QC Lot: 2276116)									



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 (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 2276116) - continued									
EM1904802-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1904605-026	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 2278607)									
EM1903599-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.04	0.00	No Limit
EM1904614-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.01	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2273475)									
EM1904771-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1904738-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2278608)									
EM1904561-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	0.00	No Limit
EM1904703-009	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	41	40	2.72	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	89	93	4.20	0% - 50%
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	7	7	0.00	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	8	7	0.00	No Limit
EM1904775-003	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
EM1904775-003	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit



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 (%)
EP074C: Sulfonated Compounds (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EM1904775-003	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EP074D: Fumigants (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EM1904775-003	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit



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 (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2275518) - continued									
EM1904666-005	Anonymous	EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EM1904775-003	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit



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 (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 2275518) - continued									
EM1904775-003	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EM1904775-003	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2273347)									
EM1904775-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2275517)									
EM1904666-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	1370	1300	5.07	0% - 20%
EM1904775-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2273347)									
EM1904775-001	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2275517)									
EM1904666-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	1240	1190	4.44	0% - 20%
EM1904775-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2275517)									
EM1904666-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	296	284	4.41	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	5	5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	44	41	6.81	0% - 20%
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	7	6	0.00	No Limit
		EP080: ortho-Xylene	106-42-3 95-47-6	2	µg/L	<2	<2	0.00	No Limit

Page : 7 of 12
 Work Order : EM1904749
 Client : GOLDER ASSOCIATES
 Project : 18113054



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 (%)
EP080: BTEXN (QC Lot: 2275517) - continued									
EM1904666-005	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	41	42	0.00	No Limit
EM1904775-003	Anonymous	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



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 (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 2274586)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	94	107
				<10	293 mg/L	104	90	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2273473)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	102	86	115
				<1	100 mg/L	90.2	86	115
EG020F: Dissolved Metals by ICP-MS (QCLot: 2276117)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	103	84	104
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.7	83	103
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.3	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	83	105
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.9	82	106
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 2276116)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.1	76	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2278607)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	100	87	117
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2273475)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.5	92	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2278608)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.6	93	120
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2275518)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	105	79	116
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	20 µg/L	100	72	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	20 µg/L	91.4	66	116
EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	20 µg/L	90.1	69	114
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	20 µg/L	101	67	115
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	20 µg/L	94.7	70	113
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	20 µg/L	98.1	70	115
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	20 µg/L	92.4	67	116
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	20 µg/L	96.2	60	116
EP074B: Oxygenated Compounds (QCLot: 2275518)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	200 µg/L	88.0	68	123



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP074B: Oxygenated Compounds (QCLot: 2275518) - continued								
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	200 µg/L	97.4	68	132
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	200 µg/L	105	75	130
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	200 µg/L	110	74	130
EP074C: Sulfonated Compounds (QCLot: 2275518)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	20 µg/L	99.6	55	125
EP074D: Fumigants (QCLot: 2275518)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	20 µg/L	98.0	65	120
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	20 µg/L	98.4	78	116
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	20 µg/L	90.4	76	112
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	20 µg/L	89.6	76	112
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	20 µg/L	105	79	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 2275518)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	200 µg/L	100	50	139
EP074: Chloromethane	74-87-3	50	µg/L	<50	200 µg/L	108	59	135
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	112	53	135
EP074: Bromomethane	74-83-9	50	µg/L	<50	200 µg/L	98.8	52	125
EP074: Chloroethane	75-00-3	50	µg/L	<50	200 µg/L	104	62	128
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	200 µg/L	107	62	125
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	108	63	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	20 µg/L	108	31	126
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	92.6	68	119
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	20 µg/L	106	74	119
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	104	77	118
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	94.0	68	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	20 µg/L	92.9	66	118
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	87.5	62	117
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	106	81	117
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	99.4	67	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	20 µg/L	101	80	116
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	110	84	117
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	20 µg/L	99.5	82	118
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	101	67	120
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	97.4	76	112
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	20 µg/L	110	71	121
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	20 µg/L	88.6	68	116
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	109	81	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	20 µg/L	108	80	123
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	20 µg/L	91.9	70	110



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				
EP074E: Halogenated Aliphatic Compounds (QCLot: 2275518) - continued								
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	20 µg/L	101	74	113
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	103	62	128
EP074F: Halogenated Aromatic Compounds (QCLot: 2275518)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	103	81	116
EP074: Bromobenzene	108-86-1	5	µg/L	<5	20 µg/L	88.4	78	114
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	20 µg/L	85.4	72	115
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	20 µg/L	87.0	71	114
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	20 µg/L	100	74	116
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	96.8	75	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	102	81	113
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	109	64	122
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	20 µg/L	106	73	120
EP074G: Trihalomethanes (QCLot: 2275518)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	105	79	117
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	20 µg/L	87.8	78	113
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	20 µg/L	101	76	112
EP074: Bromoform	75-25-2	5	µg/L	<5	20 µg/L	92.6	73	112
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2273348)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	83.6	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	111	50	117
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	79.9	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	103	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	96.1	59	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	95.2	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.6	61	120
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	99.9	56	120
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	84.8	53	120
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	79.7	57	122
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	106	56	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	101	59	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	103	54	124
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	103	55	124
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	105	54	124
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	90.3	56	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2273347)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4030 µg/L	82.6	50	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	15600 µg/L	102	55	132



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
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2273347) - continued								
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7820 µg/L	100	55	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2275517)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	101	65	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2273347)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5960 µg/L	90.1	53	129
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	20700 µg/L	99.1	56	131
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1520 µg/L	95.4	53	136
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2275517)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	98.7	64	124
EP080: BTEXN (QCLot: 2275517)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	96.2	69	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	106	73	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	107	71	125
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	103	72	129
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	106	76	129
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	102	70	125

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: 2273473)							
EM1904749-001	MW04/50010419	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	# Not Determined	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 2276117)							
EM1904605-026	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	94.7	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	100	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	73.5	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	82.3	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.2	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	97.8	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	96.9	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 2276116)							

Page : 12 of 12
 Work Order : EM1904749
 Client : GOLDER ASSOCIATES
 Project : 18113054



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
EG035F: Dissolved Mercury by FIMS (QCLot: 2276116) - continued							
EM1904605-027	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	96.3	70	120
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2278607)							
EM1903599-004	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	98.8	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2273475)							
EM1904746-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	88.8	80	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2278608)							
EM1904561-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	93.3	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 2275518)							
EM1904749-001	MW04/50010419	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	118	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	98.1	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 2275518)							
EM1904749-001	MW04/50010419	EP074: Chlorobenzene	108-90-7	20 µg/L	114	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2275517)							
EM1904749-001	MW04/50010419	EP080: C6 - C9 Fraction	----	280 µg/L	97.2	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2275517)							
EM1904749-001	MW04/50010419	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	90.0	44	122
EP080: BTEXN (QCLot: 2275517)							
EM1904749-001	MW04/50010419	EP080: Benzene	71-43-2	20 µg/L	118	68	130
		EP080: Toluene	108-88-3	20 µg/L	122	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1904749	Page	: 1 of 9
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Melbourne
Contact	: GOLDER CONTACT	Telephone	: +6138549 9644
Project	: 18113054	Date Samples Received	: 02-Apr-2019
Site	: Geelong	Issue Date	: 09-Apr-2019
Sampler	: DUNCAN FRASER	No. of samples received	: 6
Order number	: Project Number 18113054	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

- 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.

Page : 2 of 9
 Work Order : EM1904749
 Client : GOLDER ASSOCIATES
 Project : 18113054



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO ₄ 2- by DA	EM1904749--001	MW04/50010419	Sulfate as SO ₄ - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
MW04/50010419,	MW05/50010419,	----	----	----	03-Apr-2019	01-Apr-2019	2
MW05/55010419,	MW06/50010419						

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	8	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	1	20	5.00	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	20	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: **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



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
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	03-Apr-2019	01-Apr-2019	✖
Clear Plastic Bottle - Natural (EA005-P) MW25/50020419		02-Apr-2019	----	----	----	02-Apr-2019	02-Apr-2019	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	04-Apr-2019	08-Apr-2019	✔
Clear Plastic Bottle - Natural (EA015H) MW25/50020419		02-Apr-2019	----	----	----	04-Apr-2019	09-Apr-2019	✔
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	03-Apr-2019	29-Apr-2019	✔
Clear Plastic Bottle - Natural (ED041G) MW25/50020419		02-Apr-2019	----	----	----	03-Apr-2019	30-Apr-2019	✔
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	04-Apr-2019	28-Sep-2019	✔
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MW25/50020419		02-Apr-2019	----	----	----	04-Apr-2019	29-Sep-2019	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	04-Apr-2019	29-Apr-2019	✔
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW25/50020419		02-Apr-2019	----	----	----	04-Apr-2019	30-Apr-2019	✔
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	05-Apr-2019	29-Apr-2019	✔
Clear Plastic Bottle - Sulfuric Acid (EK055G) MW25/50020419		02-Apr-2019	----	----	----	05-Apr-2019	30-Apr-2019	✔
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	03-Apr-2019	03-Apr-2019	✔
Clear Plastic Bottle - Natural (EK057G) MW25/50020419		02-Apr-2019	----	----	----	03-Apr-2019	04-Apr-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	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	05-Apr-2019	29-Apr-2019	✓	
Clear Plastic Bottle - Sulfuric Acid (EK059G) MW25/50020419	02-Apr-2019	----	----	----	05-Apr-2019	30-Apr-2019	✓	
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-2019	✓	
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-2019	✓	
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-2019	✓	
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-2019	✓	
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-2019	✓	
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-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
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✔	05-Apr-2019	15-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419		02-Apr-2019	04-Apr-2019	16-Apr-2019	✔	05-Apr-2019	16-Apr-2019	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	08-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
Amber Glass Bottle - Unpreserved (EP075(SIM)) MW25/50020419		02-Apr-2019	04-Apr-2019	09-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	08-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
Amber Glass Bottle - Unpreserved (EP071) MW25/50020419		02-Apr-2019	04-Apr-2019	09-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✔	05-Apr-2019	15-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) MW25/50020419,	MW25/57020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✔	05-Apr-2019	16-Apr-2019	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	08-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
Amber Glass Bottle - Unpreserved (EP071) MW25/50020419		02-Apr-2019	04-Apr-2019	09-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✔	05-Apr-2019	15-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) MW25/50020419,	MW25/57020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✔	05-Apr-2019	16-Apr-2019	✔
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✔	05-Apr-2019	15-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) MW25/50020419,	MW25/57020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✔	05-Apr-2019	16-Apr-2019	✔



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)							
Ammonia as N by Discrete analyser	EK055G	2	16	12.50	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	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	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
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	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	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	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
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	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	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	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
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	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)							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	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	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	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
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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)
Volatile Organic Compounds	EP074	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. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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.

CERTIFICATE OF ANALYSIS

Work Order	: EM1904797	Page	: 1 of 37
Amendment	: 1		
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Melbourne
Contact	: GOLDER CONTACT	Contact	: Larissa Burns
Address	: P O BOX 6079 Building 7, 570-588 Swan St RICHMOND VIC, AUSTRALIA 3122	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 8862 3500	Telephone	: +6138549 9644
Project	: 18113054	Date Samples Received	: 01-Apr-2019 11:45
Order number	: Project Number 18113054	Date Analysis Commenced	: 03-Apr-2019
C-O-C number	: 808	Issue Date	: 18-Apr-2019 13:03
Sampler	: DUNCAN FRASER		
Site	: Thompson's Road, North Geelong -1		
Quote number	: ME-235-19 - COMPASS		
No. of samples received	: 41		
No. of samples analysed	: 25		



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>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Vanessa Phung	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



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.

- EA001: EM1904797 #1 and 17: pH analysed in non stirring method
- EP075-EM/EP066-EM: Particular sample EM1904797-001 required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- 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.
- Amendment (14/4/19): This report has been amended and re-released to allow the reporting of additional analytical data.



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW07/2001_0.50_0.6 0	MW07/2002_1.00_1.1 0	MW07/2006_4.80_4.9 0	MW08/2003_4.85_4.9 5	MW08/2005_5.60_5.7 0
Client sampling date / time				28-Mar-2019 20:01	28-Mar-2019 20:02	28-Mar-2019 20:04	28-Mar-2019 20:07	28-Mar-2019 20:10
Compound	CAS Number	LOR	Unit	EM1904797-001	EM1904797-002	EM1904797-006	EM1904797-010	EM1904797-012
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.8	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	8.1	15.5	16.1	12.2	7.8
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	18	32	105	43
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	2	<1
Copper	7440-50-8	5	mg/kg	21	5	<5	<5	<5
Lead	7439-92-1	5	mg/kg	18	10	<5	7	<5
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	63	18	6	19	11
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	54	6	19	71	31
Chromium	7440-47-3	2	mg/kg	----	32	15	22	25
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.2	0.3	0.2	0.2	0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	90	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.4	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
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	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW07/2001_0.50_0.6 0	MW07/2002_1.00_1.1 0	MW07/2006_4.80_4.9 0	MW08/2003_4.85_4.9 5	MW08/2005_5.60_5.7 0
Client sampling date / time				28-Mar-2019 20:01	28-Mar-2019 20:02	28-Mar-2019 20:04	28-Mar-2019 20:07	28-Mar-2019 20:10
Compound	CAS Number	LOR	Unit	EM1904797-001	EM1904797-002	EM1904797-006	EM1904797-010	EM1904797-012
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW07/2001_0.50_0.6 0	MW07/2002_1.00_1.1 0	MW07/2006_4.80_4.9 0	MW08/2003_4.85_4.9 5	MW08/2005_5.60_5.7 0
Client sampling date / time				28-Mar-2019 20:01	28-Mar-2019 20:02	28-Mar-2019 20:04	28-Mar-2019 20:07	28-Mar-2019 20:10
Compound	CAS Number	LOR	Unit	EM1904797-001	EM1904797-002	EM1904797-006	EM1904797-010	EM1904797-012
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	1.2	1.2	1.2
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.13	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.13	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.13	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.13	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.13	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.13	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.13	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.13	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.3	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.13	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW07/2001_0.50_0.6 0	MW07/2002_1.00_1.1 0	MW07/2006_4.80_4.9 0	MW08/2003_4.85_4.9 5	MW08/2005_5.60_5.7 0
Client sampling date / time				28-Mar-2019 20:01	28-Mar-2019 20:02	28-Mar-2019 20:04	28-Mar-2019 20:07	28-Mar-2019 20:10
Compound	CAS Number	LOR	Unit	EM1904797-001	EM1904797-002	EM1904797-006	EM1904797-010	EM1904797-012
				Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	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	----	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<2.6	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<2.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<2.6	----	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.13	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.13	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.13	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.13	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.13	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.13	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.13	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.13	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW07/2001_0.50_0.6 0	MW07/2002_1.00_1.1 0	MW07/2006_4.80_4.9 0	MW08/2003_4.85_4.9 5	MW08/2005_5.60_5.7 0
Client sampling date / time				28-Mar-2019 20:01	28-Mar-2019 20:02	28-Mar-2019 20:04	28-Mar-2019 20:07	28-Mar-2019 20:10
Compound	CAS Number	LOR	Unit	EM1904797-001	EM1904797-002	EM1904797-006	EM1904797-010	EM1904797-012
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.13	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.13	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.13	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.13	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.13	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.13	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.13	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.13	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.13	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.13	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.13	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.13	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.13	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.13	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.13	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.13	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.13	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	120	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	120	----	----	----	----
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	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	MW07/2001_0.50_0.6 0	MW07/2002_1.00_1.1 0	MW07/2006_4.80_4.9 0	MW08/2003_4.85_4.9 5	MW08/2005_5.60_5.7 0
Client sampling date / time				28-Mar-2019 20:01	28-Mar-2019 20:02	28-Mar-2019 20:04	28-Mar-2019 20:07	28-Mar-2019 20:10	
Compound	CAS Number	LOR	Unit	EM1904797-001	EM1904797-002	EM1904797-006	EM1904797-010	EM1904797-012	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----	
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----	
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----	
>C34 - C40 Fraction	----	100	mg/kg	160	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	160	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----	
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----	
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----	
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----	
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----	
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----	
^ Total Xylenes	----	0.5	mg/kg	----	----	----	<0.5	----	
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	109	----	----	----	----	
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	74.1	----	----	----	----	
Toluene-D8	2037-26-5	0.1	%	73.1	----	----	----	----	
4-Bromofluorobenzene	460-00-4	0.1	%	77.4	----	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	----	103	99.1	103	102	
2-Chlorophenol-D4	93951-73-6	0.5	%	----	103	99.9	103	102	
2,4,6-Tribromophenol	118-79-6	0.5	%	----	79.2	74.3	84.3	87.4	
EP075(SIM)T: PAH Surrogates									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW07/2001_0.50_0.6 0	MW07/2002_1.00_1.1 0	MW07/2006_4.80_4.9 0	MW08/2003_4.85_4.9 5	MW08/2005_5.60_5.7 0
Client sampling date / time				28-Mar-2019 20:01	28-Mar-2019 20:02	28-Mar-2019 20:04	28-Mar-2019 20:07	28-Mar-2019 20:10
Compound	CAS Number	LOR	Unit	EM1904797-001	EM1904797-002	EM1904797-006	EM1904797-010	EM1904797-012
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
2-Fluorobiphenyl	321-60-8	0.5	%	----	108	104	108	106
Anthracene-d10	1719-06-8	0.5	%	----	112	108	112	111
4-Terphenyl-d14	1718-51-0	0.5	%	----	108	103	108	99.9
EP075S: Acid Extractable Surrogates (Waste Classification)								
Phenol-d6	13127-88-3	0.025	%	104	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%	97.1	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%	65.7	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)								
Nitrobenzene-D5	4165-60-0	0.025	%	99.1	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	98.3	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%	107	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%	108	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%	95.6	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	81.4	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	77.7	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	87.2	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW10/2001_0.30_0.4 0	MW10/2002_3.90_4.0 0	SB08/2001_0.50_0.60	SB04/2001_1.00_1.10	SB04/2002_2.40_2.50
Client sampling date / time				28-Mar-2019 20:12	28-Mar-2019 20:13	28-Mar-2019 20:16	29-Mar-2019 16:05	29-Mar-2019 16:05
Compound	CAS Number	LOR	Unit	EM1904797-014	EM1904797-015	EM1904797-017	EM1904797-020	EM1904797-021
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl ₂)	----	0.1	pH Unit	5.3	----	7.4	7.8	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	17.8	8.0	20.5	13.2	16.4
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	25	28	15	6	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	9	<5	<5	12	11
Lead	7439-92-1	5	mg/kg	13	<5	9	9	9
Molybdenum	7439-98-7	2	mg/kg	<2	----	<2	<2	----
Nickel	7440-02-0	2	mg/kg	32	19	17	41	38
Selenium	7782-49-2	5	mg/kg	<5	----	<5	<5	----
Silver	7440-22-4	2	mg/kg	<2	----	<2	<2	----
Tin	7440-31-5	5	mg/kg	<5	----	<5	<5	----
Zinc	7440-66-6	5	mg/kg	16	57	7	32	35
Chromium	7440-47-3	2	mg/kg	----	11	----	----	27
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.2	0.2	0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	4	----	<1	<1	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	160	----	200	110	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	<0.1	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW10/2001_0.30_0.4 0	MW10/2002_3.90_4.0 0	SB08/2001_0.50_0.60	SB04/2001_1.00_1.10	SB04/2002_2.40_2.50
Client sampling date / time				28-Mar-2019 20:12	28-Mar-2019 20:13	28-Mar-2019 20:16	29-Mar-2019 16:05	29-Mar-2019 16:05
Compound	CAS Number	LOR	Unit	EM1904797-014	EM1904797-015	EM1904797-017	EM1904797-020	EM1904797-021
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	----	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	----	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	----	----	----	----	<0.05
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg	----	----	----	----	<0.5
Styrene	100-42-5	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Isopropylbenzene	98-82-8	0.5	mg/kg	----	----	----	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	<0.2	<0.2	----
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



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW10/2001_0.30_0.4 0	MW10/2002_3.90_4.0 0	SB08/2001_0.50_0.60	SB04/2001_1.00_1.10	SB04/2002_2.40_2.50
Client sampling date / time				28-Mar-2019 20:12	28-Mar-2019 20:13	28-Mar-2019 20:16	29-Mar-2019 16:05	29-Mar-2019 16:05
Compound	CAS Number	LOR	Unit	EM1904797-014	EM1904797-015	EM1904797-017	EM1904797-020	EM1904797-021
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	----	----	----	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg	----	----	----	----	<0.5
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	----	<1	<1	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	<0.01	<0.01	----
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

				MW10/2001_0.30_0.4 0	MW10/2002_3.90_4.0 0	SB08/2001_0.50_0.60	SB04/2001_1.00_1.10	SB04/2002_2.40_2.50
Client sampling date / time				28-Mar-2019 20:12	28-Mar-2019 20:13	28-Mar-2019 20:16	29-Mar-2019 16:05	29-Mar-2019 16:05
Compound	CAS Number	LOR	Unit	EM1904797-014	EM1904797-015	EM1904797-017	EM1904797-020	EM1904797-021
				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
Benzo(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 (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	----	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	----	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	----	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	<1	<1	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	<1	<1	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	<5	<5	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW10/2001_0.30_0.4 0	MW10/2002_3.90_4.0 0	SB08/2001_0.50_0.60	SB04/2001_1.00_1.10	SB04/2002_2.40_2.50
Client sampling date / time				28-Mar-2019 20:12	28-Mar-2019 20:13	28-Mar-2019 20:16	29-Mar-2019 16:05	29-Mar-2019 16:05
Compound	CAS Number	LOR	Unit	EM1904797-014	EM1904797-015	EM1904797-017	EM1904797-020	EM1904797-021
				Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	<5	<5	----
Dinoseb	88-85-7	5	mg/kg	<5	----	<5	<5	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	<1	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	1.2	1.2	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	<0.03	<0.03	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW10/2001_0.30_0.4 0	MW10/2002_3.90_4.0 0	SB08/2001_0.50_0.60	SB04/2001_1.00_1.10	SB04/2002_2.40_2.50
Client sampling date / time				28-Mar-2019 20:12	28-Mar-2019 20:13	28-Mar-2019 20:16	29-Mar-2019 16:05	29-Mar-2019 16:05
Compound	CAS Number	LOR	Unit	EM1904797-014	EM1904797-015	EM1904797-017	EM1904797-020	EM1904797-021
				Result	Result	Result	Result	Result
EP0751: Organochlorine Pesticides - Continued								
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	<10
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	<50
C10 - C14 Fraction	----	50	mg/kg	<50	----	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	<100
C15 - C28 Fraction	----	100	mg/kg	<100	----	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	<100	----	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	<50	<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

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	MW10/2001_0.30_0.4 0	MW10/2002_3.90_4.0 0	SB08/2001_0.50_0.60	SB04/2001_1.00_1.10	SB04/2002_2.40_2.50
Client sampling date / time				28-Mar-2019 20:12	28-Mar-2019 20:13	28-Mar-2019 20:16	29-Mar-2019 16:05	29-Mar-2019 16:05	
Compound	CAS Number	LOR	Unit	EM1904797-014	EM1904797-015	EM1904797-017	EM1904797-020	EM1904797-021	
				Result	Result	Result	Result	Result	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	<50	
>C10 - C16 Fraction	----	50	mg/kg	<50	----	<50	<50	----	
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	<100	
>C16 - C34 Fraction	----	100	mg/kg	<100	----	<100	<100	----	
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	----	<100	<100	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	<50	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	<50	<50	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	<50	
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	<50	<50	----	
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	<10	<10	----	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	<0.2	
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	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	117	----	119	113	----	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	----	78.0	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	----	----	----	----	74.4	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	----	----	----	----	86.0	
Toluene-D8	2037-26-5	0.5	%	----	----	----	----	73.4	
4-Bromofluorobenzene	460-00-4	0.5	%	----	----	----	----	81.4	
EP074S: VOC Surrogates (Ultra-Trace)									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW10/2001_0.30_0.4 0	MW10/2002_3.90_4.0 0	SB08/2001_0.50_0.60	SB04/2001_1.00_1.10	SB04/2002_2.40_2.50
Client sampling date / time				28-Mar-2019 20:12	28-Mar-2019 20:13	28-Mar-2019 20:16	29-Mar-2019 16:05	29-Mar-2019 16:05
Compound	CAS Number	LOR	Unit	EM1904797-014	EM1904797-015	EM1904797-017	EM1904797-020	EM1904797-021
				Result	Result	Result	Result	Result
EP074S: VOC Surrogates (Ultra-Trace) - Continued								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	78.6	----	83.0	92.4	----
Toluene-D8	2037-26-5	0.1	%	74.6	----	79.5	90.2	----
4-Bromofluorobenzene	460-00-4	0.1	%	75.6	----	81.8	90.8	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	102	----	----	99.5
2-Chlorophenol-D4	93951-73-6	0.5	%	----	104	----	----	99.6
2,4,6-Tribromophenol	118-79-6	0.5	%	----	73.4	----	----	71.1
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	107	----	----	103
Anthracene-d10	1719-06-8	0.5	%	----	112	----	----	107
4-Terphenyl-d14	1718-51-0	0.5	%	----	107	----	----	104
EP075S: Acid Extractable Surrogates (Waste Classification)								
Phenol-d6	13127-88-3	0.025	%	106	----	105	104	----
2-Chlorophenol-D4	93951-73-6	0.025	%	102	----	101	100	----
2,4,6-Tribromophenol	118-79-6	0.025	%	94.2	----	90.2	92.4	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)								
Nitrobenzene-D5	4165-60-0	0.025	%	105	----	104	101	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	100	----	98.9	96.1	----
2-Fluorobiphenyl	321-60-8	0.025	%	107	----	104	103	----
Anthracene-d10	1719-06-8	0.025	%	106	----	104	104	----
4-Terphenyl-d14	1718-51-0	0.025	%	104	----	101	102	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	71.9
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	72.8
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	103



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB05/2001_0.45_0.55	SB05/2002_1.80_1.90	SB06/2001_0.30_0.40	SB06/2002_0.80_0.90	SB07/2001_0.40_0.50
Client sampling date / time					29-Mar-2019 16:07	29-Mar-2019 16:07	29-Mar-2019 16:09	29-Mar-2019 16:09	29-Mar-2019 16:10
Compound	CAS Number	LOR	Unit		EM1904797-023	EM1904797-024	EM1904797-026	EM1904797-027	EM1904797-028
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	7.7	----	----	----	----	7.2
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	14.4	14.4	11.5	18.2	2.9	
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	7	18	18	16	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Copper	7440-50-8	5	mg/kg	12	10	<5	<5	<5	
Lead	7439-92-1	5	mg/kg	9	9	10	8	<5	
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	<2	
Nickel	7440-02-0	2	mg/kg	36	26	13	21	8	
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	<5	
Silver	7440-22-4	2	mg/kg	<2	----	----	----	<2	
Tin	7440-31-5	5	mg/kg	<5	----	----	----	<5	
Zinc	7440-66-6	5	mg/kg	22	33	10	5	<5	
Chromium	7440-47-3	2	mg/kg	----	26	31	34	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.1	0.2	0.1	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	<0.5	
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	<1	
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	110	----	----	----	50	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	<0.1	
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	----	----	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	----	----	
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	----	----	
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	----	----	
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	----	----	
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	----	----	
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	----	----	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	----	----	



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

Client sampling date / time				SB05/2001_0.45_0.55	SB05/2002_1.80_1.90	SB06/2001_0.30_0.40	SB06/2002_0.80_0.90	SB07/2001_0.40_0.50
				29-Mar-2019 16:07	29-Mar-2019 16:07	29-Mar-2019 16:09	29-Mar-2019 16:09	29-Mar-2019 16:10
Compound	CAS Number	LOR	Unit	EM1904797-023	EM1904797-024	EM1904797-026	EM1904797-027	EM1904797-028
				Result	Result	Result	Result	Result

EP068A: Organochlorine Pesticides (OC) - Continued

^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	----	----
4,4'-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	----

EP074A: Monocyclic Aromatic Hydrocarbons

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
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	<0.2
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	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB05/2001_0.45_0.55	SB05/2002_1.80_1.90	SB06/2001_0.30_0.40	SB06/2002_0.80_0.90	SB07/2001_0.40_0.50
Client sampling date / time					29-Mar-2019 16:07	29-Mar-2019 16:07	29-Mar-2019 16:09	29-Mar-2019 16:09	29-Mar-2019 16:10
Compound	CAS Number	LOR	Unit		EM1904797-023	EM1904797-024	EM1904797-026	EM1904797-027	EM1904797-028
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
n-Butylbenzene	104-51-8	0.5	mg/kg		----	----	<0.5	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	<0.01
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		----	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		----	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		----	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		----	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SB05/2001_0.45_0.55	SB05/2002_1.80_1.90	SB06/2001_0.30_0.40	SB06/2002_0.80_0.90	SB07/2001_0.40_0.50
Client sampling date / time				29-Mar-2019 16:07	29-Mar-2019 16:07	29-Mar-2019 16:09	29-Mar-2019 16:09	29-Mar-2019 16:10
Compound	CAS Number	LOR	Unit	EM1904797-023	EM1904797-024	EM1904797-026	EM1904797-027	EM1904797-028
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	1.2	1.2	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	----	----	----	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	----	----	----	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	----	----	----	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	----	----	----	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	----	----	----	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	----	----	----	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	----	----	----	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	----	----	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	----	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	----	----	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	<5
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	<5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB05/2001_0.45_0.55	SB05/2002_1.80_1.90	SB06/2001_0.30_0.40	SB06/2002_0.80_0.90	SB07/2001_0.40_0.50
Client sampling date / time					29-Mar-2019 16:07	29-Mar-2019 16:07	29-Mar-2019 16:09	29-Mar-2019 16:09	29-Mar-2019 16:10
Compound	CAS Number	LOR	Unit		EM1904797-023	EM1904797-024	EM1904797-026	EM1904797-027	EM1904797-028
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Non-halogenated) - Continued									
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	----	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	----	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	<0.5
Acenaphthylene	208-96-8	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
Benzo(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) & Benzo(k)fluoranthene	205-99-2 207-08-9	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
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	<0.03
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SB05/2001_0.45_0.55	SB05/2002_1.80_1.90	SB06/2001_0.30_0.40	SB06/2002_0.80_0.90	SB07/2001_0.40_0.50
Client sampling date / time				29-Mar-2019 16:07	29-Mar-2019 16:07	29-Mar-2019 16:09	29-Mar-2019 16:09	29-Mar-2019 16:10
Compound	CAS Number	LOR	Unit	EM1904797-023	EM1904797-024	EM1904797-026	EM1904797-027	EM1904797-028
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	----	----	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	----	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	----	----	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	----	----	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	----	----	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	----	----	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	----	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	----	----	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	----	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	<10
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
^ 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	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB05/2001_0.45_0.55	SB05/2002_1.80_1.90	SB06/2001_0.30_0.40	SB06/2002_0.80_0.90	SB07/2001_0.40_0.50
Client sampling date / time					29-Mar-2019 16:07	29-Mar-2019 16:07	29-Mar-2019 16:09	29-Mar-2019 16:09	29-Mar-2019 16:10
Compound	CAS Number	LOR	Unit		EM1904797-023	EM1904797-024	EM1904797-026	EM1904797-027	EM1904797-028
				Result	Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	<10
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg	----	----	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	114	----	----	----	----	99.6
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	82.7	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	----	----	----	84.8	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	----	----	----	78.0	----	----
Toluene-D8	2037-26-5	0.5	%	----	----	----	69.5	----	----
4-Bromofluorobenzene	460-00-4	0.5	%	----	----	----	74.5	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	83.5	----	----	----	----	94.3
Toluene-D8	2037-26-5	0.1	%	81.7	----	----	----	----	90.9
4-Bromofluorobenzene	460-00-4	0.1	%	85.5	----	----	----	----	94.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB05/2001_0.45_0.55	SB05/2002_1.80_1.90	SB06/2001_0.30_0.40	SB06/2002_0.80_0.90	SB07/2001_0.40_0.50
Client sampling date / time					29-Mar-2019 16:07	29-Mar-2019 16:07	29-Mar-2019 16:09	29-Mar-2019 16:09	29-Mar-2019 16:10
Compound	CAS Number	LOR	Unit		EM1904797-023	EM1904797-024	EM1904797-026	EM1904797-027	EM1904797-028
					Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	91.6	99.6	102	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	92.2	100	103	----
2,4,6-Tribromophenol	118-79-6	0.5	%		----	66.6	76.2	75.8	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	95.2	104	107	----
Anthracene-d10	1719-06-8	0.5	%		----	99.5	108	111	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	95.7	104	107	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		109	----	----	----	92.4
2-Chlorophenol-D4	93951-73-6	0.025	%		104	----	----	----	87.6
2,4,6-Tribromophenol	118-79-6	0.025	%		92.0	----	----	----	98.9
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		110	----	----	----	90.6
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		102	----	----	----	87.4
2-Fluorobiphenyl	321-60-8	0.025	%		109	----	----	----	107
Anthracene-d10	1719-06-8	0.025	%		108	----	----	----	94.9
4-Terphenyl-d14	1718-51-0	0.025	%		105	----	----	----	98.4
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	65.4	----	----
Toluene-D8	2037-26-5	0.2	%		----	----	70.3	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	92.8	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SB09/2001_0.20_0.30	SB10/2001_0.30_0.40	SB10/2801_0.30_0.40	SB11/2001_0.30_0.40	MW09/2001_0.40_0.50
Client sampling date / time				29-Mar-2019 16:11	29-Mar-2019 16:12	29-Mar-2019 16:13	29-Mar-2019 16:15	29-Mar-2019 16:16
Compound	CAS Number	LOR	Unit	EM1904797-030	EM1904797-031	EM1904797-032	EM1904797-034	EM1904797-036
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl ₂)	----	0.1	pH Unit	----	----	----	7.8	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	9.7	21.6	20.7	9.6	6.1
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	41	39	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	10	<5	<5	17	42
Lead	7439-92-1	5	mg/kg	<5	11	10	<5	<5
Molybdenum	7439-98-7	2	mg/kg	----	----	----	5	----
Nickel	7440-02-0	2	mg/kg	43	29	25	46	118
Selenium	7782-49-2	5	mg/kg	----	----	----	<5	----
Silver	7440-22-4	2	mg/kg	----	----	----	<2	----
Tin	7440-31-5	5	mg/kg	----	----	----	<5	----
Zinc	7440-66-6	5	mg/kg	18	9	9	23	53
Chromium	7440-47-3	2	mg/kg	11	66	59	----	18
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	----	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	----	<1	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	----	----	60	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons								
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	----
Styrene	100-42-5	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
[^] Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	----	----	<0.2	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SB09/2001_0.20_0.30	SB10/2001_0.30_0.40	SB10/2801_0.30_0.40	SB11/2001_0.30_0.40	MW09/2001_0.40_0.50
Client sampling date / time				29-Mar-2019 16:11	29-Mar-2019 16:12	29-Mar-2019 16:13	29-Mar-2019 16:15	29-Mar-2019 16:16
Compound	CAS Number	LOR	Unit	EM1904797-030	EM1904797-031	EM1904797-032	EM1904797-034	EM1904797-036
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	----	0.5	mg/kg	----	----	----	<0.5	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	----	----	----	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	----	----	----	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg	----	----	----	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	----	----	----	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	----	----	----	<0.01	----
Chloroform	67-66-3	0.02	mg/kg	----	----	----	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	----	----	----	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	----	----	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	----	----	----	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg	----	----	----	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	----	----	----	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg	----	----	----	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	----	----	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	----	----	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	----	----	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg	----	----	----	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	----	----	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	----	----	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	----	----	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	----	----	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	----	----	<0.01	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SB09/2001_0.20_0.30	SB10/2001_0.30_0.40	SB10/2801_0.30_0.40	SB11/2001_0.30_0.40	MW09/2001_0.40_0.50
Client sampling date / time				29-Mar-2019 16:11	29-Mar-2019 16:12	29-Mar-2019 16:13	29-Mar-2019 16:15	29-Mar-2019 16:16
Compound	CAS Number	LOR	Unit	EM1904797-030	EM1904797-031	EM1904797-032	EM1904797-034	EM1904797-036
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	----	1.2
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	----	----	----	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	----	----	----	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	----	----	----	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	----	----	----	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	----	----	----	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	----	----	----	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	----	----	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	----	----	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg	----	----	----	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	----	----	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	----	----	----	<1	----
2-Methylphenol	95-48-7	1	mg/kg	----	----	----	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	----	<1	----
2-Nitrophenol	88-75-5	1	mg/kg	----	----	----	<1	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	----	----	----	<1	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	----	----	----	<5	----
4-Nitrophenol	100-02-7	5	mg/kg	----	----	----	<5	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	----	----	----	<5	----
Dinoseb	88-85-7	5	mg/kg	----	----	----	<5	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SB09/2001_0.20_0.30	SB10/2001_0.30_0.40	SB10/2801_0.30_0.40	SB11/2001_0.30_0.40	MW09/2001_0.40_0.50
Client sampling date / time				29-Mar-2019 16:11	29-Mar-2019 16:12	29-Mar-2019 16:13	29-Mar-2019 16:15	29-Mar-2019 16:16
Compound	CAS Number	LOR	Unit	EM1904797-030	EM1904797-031	EM1904797-032	EM1904797-034	EM1904797-036
				Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Non-halogenated) - Continued								
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	----	----	----	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	----	----	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	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) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	1.2	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	----	----	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	----	----	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg	----	----	----	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg	----	----	----	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg	----	----	----	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg	----	----	----	<0.03	----
Aldrin	309-00-2	0.03	mg/kg	----	----	----	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	----	----	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg	----	----	----	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg	----	----	----	<0.03	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SB09/2001_0.20_0.30	SB10/2001_0.30_0.40	SB10/2801_0.30_0.40	SB11/2001_0.30_0.40	MW09/2001_0.40_0.50
Client sampling date / time				29-Mar-2019 16:11	29-Mar-2019 16:12	29-Mar-2019 16:13	29-Mar-2019 16:15	29-Mar-2019 16:16
Compound	CAS Number	LOR	Unit	EM1904797-030	EM1904797-031	EM1904797-032	EM1904797-034	EM1904797-036
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
Endosulfan 1	959-98-8	0.03	mg/kg	----	----	----	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg	----	----	----	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	----	----	<0.03	----
Endrin	72-20-8	0.03	mg/kg	----	----	----	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg	----	----	----	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	----	----	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg	----	----	----	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg	----	----	----	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	----	----	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	----	----	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	----	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg	----	----	----	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	----	----	<0.03	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----
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								
>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	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	94.5	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SB09/2001_0.20_0.30	SB10/2001_0.30_0.40	SB10/2801_0.30_0.40	SB11/2001_0.30_0.40	MW09/2001_0.40_0.50
Client sampling date / time				29-Mar-2019 16:11	29-Mar-2019 16:12	29-Mar-2019 16:13	29-Mar-2019 16:15	29-Mar-2019 16:16
Compound	CAS Number	LOR	Unit	EM1904797-030	EM1904797-031	EM1904797-032	EM1904797-034	EM1904797-036
				Result	Result	Result	Result	Result
EP074S: VOC Surrogates (Ultra-Trace)								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	84.8	----
Toluene-D8	2037-26-5	0.1	%	----	----	----	81.8	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	85.7	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	101	101	106	----	101
2-Chlorophenol-D4	93951-73-6	0.5	%	102	102	106	----	101
2,4,6-Tribromophenol	118-79-6	0.5	%	79.1	81.1	87.9	----	72.9
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	104	106	110	----	104
Anthracene-d10	1719-06-8	0.5	%	110	111	117	----	110
4-Terphenyl-d14	1718-51-0	0.5	%	105	106	112	----	105
EP075S: Acid Extractable Surrogates (Waste Classification)								
Phenol-d6	13127-88-3	0.025	%	----	----	----	106	----
2-Chlorophenol-D4	93951-73-6	0.025	%	----	----	----	84.7	----
2,4,6-Tribromophenol	118-79-6	0.025	%	----	----	----	75.1	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)								
Nitrobenzene-D5	4165-60-0	0.025	%	----	----	----	96.9	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	----	----	----	87.9	----
2-Fluorobiphenyl	321-60-8	0.025	%	----	----	----	104	----
Anthracene-d10	1719-06-8	0.025	%	----	----	----	98.4	----
4-Terphenyl-d14	1718-51-0	0.025	%	----	----	----	101	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				MW09/2801_0.40_0.5 0	MW09/2003_4.90_5.0 0	----	----	----
Client sampling date / time				29-Mar-2019 16:17	29-Mar-2019 16:18	----	----	----
Compound	CAS Number	LOR	Unit	EM1904797-037	EM1904797-039	-----	-----	-----
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	5.6	8.2	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	86	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	1	----	----	----
Copper	7440-50-8	5	mg/kg	40	<5	----	----	----
Lead	7439-92-1	5	mg/kg	<5	<5	----	----	----
Nickel	7440-02-0	2	mg/kg	107	17	----	----	----
Zinc	7440-66-6	5	mg/kg	50	52	----	----	----
Chromium	7440-47-3	2	mg/kg	19	20	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	99.8	102	----	----	----



Analytical Results

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

Client sample ID

				MW09/2801_0.40_0.5 0	MW09/2003_4.90_5.0 0	----	----	----
Client sampling date / time				29-Mar-2019 16:17	29-Mar-2019 16:18	----	----	----
Compound	CAS Number	LOR	Unit	EM1904797-037	EM1904797-039	-----	-----	-----
				Result	Result	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
2-Chlorophenol-D4	93951-73-6	0.5	%	100	103	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%	72.9	81.2	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	104	106	----	----	----
Anthracene-d10	1719-06-8	0.5	%	109	112	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	104	106	----	----	----



Analytical Results

Sub-Matrix: **SOLID**
 (Matrix: **SOLID**)

Client sample ID

				MW07B/ASB01_0.30_0.40 Potential ACM	----	----	----	----
Client sampling date / time				28-Mar-2019 20:21	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1904797-019	-----	-----	-----	-----
				Result	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	Yes	----	----	----	----
Asbestos Type	1332-21-4	-	--	Ch + Am	----	----	----	----
Sample weight (dry)	----	0.01	g	47.6	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	V.PHUNG	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	No	----	----	----	----
Organic Fibre	----	0.1	g/kg	No	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW08/2701	Trip Blank 2	----	----	----
Client sampling date / time					28-Mar-2019 20:17	28-Mar-2019 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1904797-018	EM1904797-041	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	----	----	----
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		78.0	78.9	----	----	----
Toluene-D8	2037-26-5	2	%		93.8	88.6	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		81.4	79.7	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: SOLID		
Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	MW07B/ASB01_0.30_0.40Potential ACM - 28-Mar-2019 20:21	Asbestos sheeting fragment approx 65 x 55 x 19mm.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	38	128
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	33	139
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	62	122
Toluene-D8	2037-26-5	64	120
4-Bromofluorobenzene	460-00-4	66	124
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High

Page : 37 of 37
Work Order : EM1904797 Amendment 1
Client : GOLDER ASSOCIATES
Project : 18113054



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

QUALITY CONTROL REPORT

Work Order : **EM1904797**

Page : 1 of 22

Amendment : **1**

Client : **GOLDER ASSOCIATES**
 Contact : **GOLDER CONTACT**
 Address : P O BOX 6079 Building 7, 570-588 Swan St
 RICHMOND VIC, AUSTRALIA 3122
 Telephone : +61 03 8862 3500
 Project : 18113054
 Order number : Project Number 18113054
 C-O-C number : 808
 Sampler : DUNCAN FRASER
 Site : Thompson's Road, North Geelong -1
 Quote number : ME-235-19 - COMPASS
 No. of samples received : 41
 No. of samples analysed : 25

Laboratory : Environmental Division Melbourne
 Contact : Larissa Burns
 Address : 4 Westall Rd Springvale VIC Australia 3171
 Telephone : +6138549 9644
 Date Samples Received : 01-Apr-2019
 Date Analysis Commenced : 03-Apr-2019
 Issue Date : 18-Apr-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
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Vanessa Phung	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



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**

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: 2278676)									
EM1904797-001	MW07/2001_0.50_0.60	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	26	23	11.6	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	63	55	13.7	0% - 20%
		EG005T: Silver	7440-22-4	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	21	22	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	18	14	24.6	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	54	52	2.84	0% - 50%
EM1904797-020	SB04/2001_1.00_1.10	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	27	26	0.00	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	41	34	19.9	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	11	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	9	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	31	3.88	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2278678)									
EM1904797-036	MW09/2001_0.40_0.50	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	20	10.8	0% - 50%

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: 2278678) - continued									
EM1904797-036	MW09/2001_0.40_0.50	EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	118	118	0.00	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	42	43	3.53	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	53	54	0.00	0% - 50%
EM1904912-018	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	17	11.1	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	18	11	47.6	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	10	15.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	26	20	24.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	84	82	1.92	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	115	132	13.8	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 2274641)									
EM1904703-001	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	3.6	3.6	0.00	0% - 20%
EM1904713-008	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	4.3	4.4	3.21	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 2278688)									
EM1904605-002	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	6.9	6.9	0.00	0% - 20%
EM1904605-024	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	6.3	6.4	0.00	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 2278689)									
EM1904797-023	SB05/2001_0.45_0.55	EA001: pH (CaCl2)	----	0.1	pH Unit	7.7	7.8	0.00	0% - 20%
EM1904990-004	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.2	6.9	3.54	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2279278)									
EM1904581-011	Anonymous	EA055: Moisture Content	----	0.1	%	16.9	17.0	0.647	0% - 20%
EM1904605-012	Anonymous	EA055: Moisture Content	----	0.1	%	10.6	10.6	0.00	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2279279)									
EM1904797-021	SB04/2002_2.40_2.50	EA055: Moisture Content	----	0.1	%	16.4	18.2	10.7	0% - 50%
EM1904947-001	Anonymous	EA055: Moisture Content	----	0.1	%	6.3	6.2	1.88	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2279823)									
EM1904780-001	Anonymous	EA055: Moisture Content	----	0.1	%	6.3	6.4	0.00	No Limit
EM1904797-002	MW07/2002_1.00_1.10	EA055: Moisture Content	----	0.1	%	15.5	15.3	1.43	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2279827)									



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 (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2279827) - continued									
EM1904797-036	MW09/2001_0.40_0.50	EA055: Moisture Content	----	0.1	%	6.1	6.3	3.27	No Limit
EM1904815-003	Anonymous	EA055: Moisture Content	----	0.1	%	5.5	5.4	2.65	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2278675)									
EM1904797-001	MW07/2001_0.50_0.60	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.3	0.00	No Limit
EM1904797-020	SB04/2001_1.00_1.10	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2278677)									
EM1904797-036	MW09/2001_0.40_0.50	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1904912-018	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 2279050)									
EM1904605-009	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1904797-017	SB08/2001_0.50_0.60	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 2279709)									
EM1904605-007	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1904780-005	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 2276508)									
EM1904605-009	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	210	200	0.00	No Limit
EM1904797-017	SB08/2001_0.50_0.60	EK040T: Fluoride	16984-48-8	40	mg/kg	200	240	15.9	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2275687)									
EM1904605-012	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1904797-023	SB05/2001_0.45_0.55	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2278851)									
EM1904797-021	SB04/2002_2.40_2.50	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit



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 (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2278851) - continued									
EM1904797-021	SB04/2002_2.40_2.50	EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 2274738)									
EM1904797-001	MW07/2001_0.50_0.60	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1904799-004	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
EM1904799-004	Anonymous	EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 2278596)									
EM1904797-021	SB04/2002_2.40_2.50	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
EP074H: Naphthalene (QC Lot: 2274738)									
EM1904797-001	MW07/2001_0.50_0.60	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1904799-004	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 2274738)									
EM1904797-001	MW07/2001_0.50_0.60	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 2274738) - continued									
EM1904797-001	MW07/2001_0.50_0.60	EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit		
EM1904799-004	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2278849)							
EM1904906-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



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: 2278849) - continued									
EM1904906-001	Anonymous	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
EM1904797-021	SB04/2002_2.40_2.50	EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 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
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 2275685)									
EM1904605-012	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
			0-2						
EM1904797-023	SB05/2001_0.45_0.55	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 2275685) - continued									
EM1904797-023	SB05/2001_0.45_0.55	EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 2275685)									
EM1904605-012	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1904797-023	SB05/2001_0.45_0.55	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2275685)									
EM1904605-012	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						



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 (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2275685) - continued									
EM1904605-012	Anonymous	EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1904797-023	SB05/2001_0.45_0.55	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 2275685)									
EM1904605-012	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 2275685) - continued									
EM1904605-012	Anonymous	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1904797-023	SB05/2001_0.45_0.55	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2274738)									
EM1904797-001	MW07/2001_0.50_0.60	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1904799-004	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2275686)									
EM1904605-012	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1904797-023	SB05/2001_0.45_0.55	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2278597)									
EM1904797-021	SB04/2002_2.40_2.50	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2278850)									
EM1904797-021	SB04/2002_2.40_2.50	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
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2302070)									

Page : 11 of 22
 Work Order : EM1904797 Amendment 1
 Client : GOLDER ASSOCIATES
 Project : 18113054



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 (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2302070) - continued									
EM1904797-010	MW08/2003_4.85_4.95	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2274738)									
EM1904797-001	MW07/2001_0.50_0.60	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1904799-004	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2275686)									
EM1904605-012	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1904797-023	SB05/2001_0.45_0.55	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2278597)									
EM1904797-021	SB04/2002_2.40_2.50	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2278850)									
EM1904797-021	SB04/2002_2.40_2.50	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
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2302070)									
EM1904797-010	MW08/2003_4.85_4.95	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 2278597)									
EM1904797-021	SB04/2002_2.40_2.50	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	
EP080: BTEXN (QC Lot: 2302070)									
EM1904797-010	MW08/2003_4.85_4.95	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



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 (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2275512)									
EM1904674-012	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1904740-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2275512)									
EM1904674-012	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1904740-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2275512)									
EM1904674-012	Anonymous	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
EM1904740-005	Anonymous	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



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

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				
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2278676)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	91.8	78	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	91.1	76	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	90.6	78	110
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	93.9	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	91.3	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	78	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	98.0	80	109
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	92	110
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	82.5	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	78	117
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	96.6	79	110
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2278678)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	94.5	78	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	93.0	76	108
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	91.0	78	110
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	94.5	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	92.7	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	78	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	99.7	80	109
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	92	110
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	82.8	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	78	117
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.6	79	110
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2278675)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	89.5	77	104
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2278677)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	94.7	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2279050)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	83.5	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 2279709)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	102	80	107
EK040T: Fluoride Total (QCLot: 2276508)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	87.5	75	110



Sub-Matrix: **SOIL**

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				
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2275687)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1.27 mg/kg	107	63	118
EP068A: Organochlorine Pesticides (OC) (QCLot: 2278851)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	108	69	122
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	108	71	122
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	103	72	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	99.1	66	124
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	60	120
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	62	120
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	100	70	122
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	106	70	121
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	94.1	68	124
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	71	124
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	104	71	122
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.7	65	123
EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	104	71	121
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	107	63	129
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	104	70	122
EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	103	69	128
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	112	69	129
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	104	64	129
EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	96.8	62	129
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	104	76	123
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	102	58	129
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2274738)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	88.9	68	117
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	88.0	67	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	84.7	66	119
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	82.9	66	115
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	86.0	71	115
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	86.0	68	113
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2278596)								
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	98.8	73	116
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	90.2	66	118
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	75.1	60	110
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	80.9	63	109
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	78.4	60	111
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	76.4	63	109



Sub-Matrix: **SOIL**

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				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2278596) - continued								
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	79.3	64	110
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	81.4	61	113
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	72.8	54	113
EP074H: Naphthalene (QCLot: 2274738)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	95.9	75	113
EP074I: Volatile Halogenated Compounds (QCLot: 2274738)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	113	51	136
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	87.3	56	125
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	91.8	70	117
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	83.1	61	122
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	88.1	70	114
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	89.7	69	112
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	93.7	62	124
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	86.8	56	126
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	98.4	73	118
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	84.7	66	117
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	90.8	76	115
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	85.6	62	120
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	90.9	71	118
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	88.9	69	119
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	73.7	47	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	87.7	73	114
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	76.9	66	114
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	85.7	73	110
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	78.3	54	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2278849)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	112	77	129
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	107	74	130
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	110	78	129
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	107	78	128
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	113	83	130
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	119	76	129
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	108	79	134
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	113	84	135
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	106	72	125
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	116	76	135
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	101	69	123
	205-82-3							



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				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2278849) - continued								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	111	77	131
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	103	65	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	97.9	65	124
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	101	66	127
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	103	65	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 2275685)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	110	69	123
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	117	55	128
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	120	70	123
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	124	56	128
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	113	66	126
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	120	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	4 mg/kg	121	65	124
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	# 133	64	128
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	120	43	127
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 2275685)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	114	58	126
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	110	65	126
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	116	64	123
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	118	53	128
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	121	56	136
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	102	41	156
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	96.9	48	130
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	95.4	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	98.4	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	121	36	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2275685)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	118	70	123
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	120	70	130
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	124	68	131
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	120	72	128
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	119	75	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	121	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	127	75	128
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	126	73	130
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	117	72	131
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	122	77	133



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2275685) - continued								
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	121	76	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	124	70	130
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	122	72	134
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	122	72	135
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	126	71	134
EP075I: Organochlorine Pesticides (QCLot: 2275685)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	119	71	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	114	70	126
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	130	70	130
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	121	71	129
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	120	74	128
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	123	72	126
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	127	72	127
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	120	73	129
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	118	72	131
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	120	73	130
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	116	64	137
EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	123	73	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	124	72	132
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	128	42	160
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	114	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	127	73	132
EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	128	75	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	123	73	133
EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	133	67	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	127	67	135
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2274738)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	85.3	63	122
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2275686)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	91.8	70	120
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	100	83	121
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	91.3	77	117
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2278597)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	101	61	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2278850)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	114	72	122
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	119	84	123



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2278850) - continued								
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	110	79	119
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2302070)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	80.5	61	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2302073)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	92.0	72	122
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	94.7	84	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	88.2	79	119
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2274738)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	82.9	62	121
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
	X							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2275686)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	110	75	119
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	90.8	82	119
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	90.1	68	124
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2278597)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	96.6	60	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2278850)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	113	77	121
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	116	83	121
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	110	65	123
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2302070)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	78.7	60	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2302073)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	92.6	77	121
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	93.6	83	121
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	85.0	65	123
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN (QCLot: 2278597)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	98.2	63	119
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	97.1	67	126
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	103	66	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	108	68	128



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				
EP080: BTEXN (QCLot: 2278597) - continued								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	116	73	128
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	92.0	61	123
EP080: BTEXN (QCLot: 2302070)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	84.5	63	119
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	87.3	67	126
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	84.7	66	124
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4 mg/kg	89.2	68	128
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	94.3	73	128
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	97.0	61	123

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				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2275512)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	81.1	65	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2275512)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	78.6	64	124
EP080: BTEXN (QCLot: 2275512)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	79.2	69	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	88.9	73	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	89.1	71	125
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	81.8	72	129
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	86.9	76	129
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	86.9	70	125

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2278676)							
EM1904797-001	MW07/2001_0.50_0.60	EG005T: Arsenic	7440-38-2	50 mg/kg	91.1	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.6	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	85.7	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	96.9	82	124



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: 2278676) - continued							
EM1904797-001	MW07/2001_0.50_0.60	EG005T: Lead	7439-92-1	50 mg/kg	84.9	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	81.7	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	84.8	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	85.7	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	77.1	74	128
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2278678)							
EM1904797-037	MW09/2801_0.40_0.50	EG005T: Arsenic	7440-38-2	50 mg/kg	93.4	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	87.8	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	89.2	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	94.6	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	88.9	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	86.4	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	95.8	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	83.7	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	84.4	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2278675)							
EM1904797-001	MW07/2001_0.50_0.60	EG035T: Mercury	7439-97-6	0.5 mg/kg	98.3	76	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2278677)							
EM1904797-037	MW09/2801_0.40_0.50	EG035T: Mercury	7439-97-6	0.5 mg/kg	104	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2279050)							
EM1904605-012	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	86.6	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 2279709)							
EM1904605-009	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	109	77	113
EK040T: Fluoride Total (QCLot: 2276508)							
EM1904605-012	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	96.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2275687)							
EM1904605-019	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1.27 mg/kg	102	36	152
EP068A: Organochlorine Pesticides (OC) (QCLot: 2278851)							
EM1904797-026	SB06/2001_0.30_0.40	EP068: gamma-BHC	58-89-9	0.5 mg/kg	94.5	22	139
		EP068: Heptachlor	76-44-8	0.5 mg/kg	92.3	18	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	96.0	23	136
		EP068: Dieldrin	60-57-1	0.5 mg/kg	98.7	42	136
		EP068: Endrin	72-20-8	0.5 mg/kg	105	23	146
		EP068: 4,4'-DDT	50-29-3	0.5 mg/kg	92.8	20	133
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2274738)							
EM1904797-014	MW10/2001_0.30_0.40	EP074-UT: Benzene	71-43-2	2 mg/kg	85.7	50	138



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
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2274738) - continued							
EM1904797-014	MW10/2001_0.30_0.40	EP074-UT: Toluene	108-88-3	2 mg/kg	83.5	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 2274738)							
EM1904797-014	MW10/2001_0.30_0.40	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	90.5	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	82.2	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	86.8	28	134
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2278849)							
EM1904797-006	MW07/2006_4.80_4.90	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	101	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	105	52	148
EP075A: Phenolic Compounds (Halogenated) (QCLot: 2275685)							
EM1904605-014	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	103	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	111	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	65.4	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 2275685)							
EM1904605-014	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	106	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	107	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2275685)							
EM1904605-014	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	114	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	116	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2274738)							
EM1904797-014	MW10/2001_0.30_0.40	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	70.3	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2275686)							
EM1904605-017	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	91.9	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	95.8	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	85.0	64	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2278597)							
EM1904797-026	SB06/2001_0.30_0.40	EP080: C6 - C9 Fraction	----	28 mg/kg	87.9	42	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2278850)							
EM1904797-026	SB06/2001_0.30_0.40	EP071: C10 - C14 Fraction	----	806 mg/kg	107	53	123
		EP071: C15 - C28 Fraction	----	3006 mg/kg	112	70	124
		EP071: C29 - C36 Fraction	----	1584 mg/kg	105	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2274738)							
EM1904797-014	MW10/2001_0.30_0.40	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	66.3	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2275686)							
EM1904605-017	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	108	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	86.3	67	121

Page : 22 of 22
 Work Order : EM1904797 Amendment 1
 Client : GOLDER ASSOCIATES
 Project : 18113054



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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2275686) - continued							
EM1904605-017	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	58.6	44	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2278597)							
EM1904797-026	SB06/2001_0.30_0.40	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	82.0	39	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2278850)							
EM1904797-026	SB06/2001_0.30_0.40	EP071: >C10 - C16 Fraction	----	1160 mg/kg	107	65	123
		EP071: >C16 - C34 Fraction	----	3978 mg/kg	110	67	121
		EP071: >C34 - C40 Fraction	----	313 mg/kg	108	44	126
EP080: BTEXN (QCLot: 2278597)							
EM1904797-026	SB06/2001_0.30_0.40	EP080: Benzene	71-43-2	2 mg/kg	107	50	136
		EP080: Toluene	108-88-3	2 mg/kg	101	56	139

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
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2275512)							
EM1904740-001	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	66.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2275512)							
EM1904740-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	64.1	44	122
EP080: BTEXN (QCLot: 2275512)							
EM1904740-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	95.1	68	130
		EP080: Toluene	108-88-3	20 µg/L	94.6	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1904797	Page	: 1 of 12
Amendment	: 1		
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Melbourne
Contact	: GOLDER CONTACT	Telephone	: +6138549 9644
Project	: 18113054	Date Samples Received	: 01-Apr-2019
Site	: Thompson's Road, North Geelong -1	Issue Date	: 18-Apr-2019
Sampler	: DUNCAN FRASER	No. of samples received	: 41
Order number	: Project Number 18113054	No. of samples analysed	: 25

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.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075A: Phenolic Compounds (Halogenated)	QC-2275685-001	----	2.3.4.5 & 2.3.4.6-Tetrachlorop henol	4901-51-3/58-90-2	133 %	64-128%	Recovery greater than upper control limit

Outliers : Analysis Holding Time Compliance

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
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved MW08/2003_4.85_4.95	17-Apr-2019	11-Apr-2019	6	17-Apr-2019	11-Apr-2019	6
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Soil Glass Jar - Unpreserved MW08/2003_4.85_4.95	17-Apr-2019	11-Apr-2019	6	17-Apr-2019	11-Apr-2019	6
EP080: BTEXN						
Soil Glass Jar - Unpreserved MW08/2003_4.85_4.95	17-Apr-2019	11-Apr-2019	6	17-Apr-2019	11-Apr-2019	6

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	04-Apr-2019	04-Apr-2019	✓	04-Apr-2019	04-Apr-2019	✓
Soil Glass Jar - Unpreserved (EA001) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	05-Apr-2019	05-Apr-2019	✓	05-Apr-2019	05-Apr-2019	✓



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	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) MW07/2001_0.50_0.60, MW07/2006_4.80_4.90, MW08/2005_5.60_5.70, MW10/2002_3.90_4.00,	MW07/2002_1.00_1.10, MW08/2003_4.85_4.95, MW10/2001_0.30_0.40, SB08/2001_0.50_0.60	28-Mar-2019	----	----	----	05-Apr-2019	11-Apr-2019	✓
Soil Glass Jar - Unpreserved (EA055) SB04/2001_1.00_1.10, SB05/2001_0.45_0.55, SB06/2001_0.30_0.40, SB07/2001_0.40_0.50, SB10/2001_0.30_0.40, SB11/2001_0.30_0.40, MW09/2801_0.40_0.50,	SB04/2002_2.40_2.50, SB05/2002_1.80_1.90, SB06/2002_0.80_0.90, SB09/2001_0.20_0.30, SB10/2801_0.30_0.40, MW09/2001_0.40_0.50, MW09/2003_4.90_5.00	29-Mar-2019	----	----	----	05-Apr-2019	12-Apr-2019	✓
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) MW07/2001_0.50_0.60, MW07/2006_4.80_4.90, MW08/2005_5.60_5.70, MW10/2002_3.90_4.00,	MW07/2002_1.00_1.10, MW08/2003_4.85_4.95, MW10/2001_0.30_0.40, SB08/2001_0.50_0.60	28-Mar-2019	05-Apr-2019	24-Sep-2019	✓	05-Apr-2019	24-Sep-2019	✓
Soil Glass Jar - Unpreserved (EG005T) SB04/2001_1.00_1.10, SB05/2001_0.45_0.55, SB06/2001_0.30_0.40, SB07/2001_0.40_0.50, SB10/2001_0.30_0.40, SB11/2001_0.30_0.40, MW09/2801_0.40_0.50,	SB04/2002_2.40_2.50, SB05/2002_1.80_1.90, SB06/2002_0.80_0.90, SB09/2001_0.20_0.30, SB10/2801_0.30_0.40, MW09/2001_0.40_0.50, MW09/2003_4.90_5.00	29-Mar-2019	05-Apr-2019	25-Sep-2019	✓	05-Apr-2019	25-Sep-2019	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) MW07/2001_0.50_0.60, MW07/2006_4.80_4.90, MW08/2005_5.60_5.70, MW10/2002_3.90_4.00,	MW07/2002_1.00_1.10, MW08/2003_4.85_4.95, MW10/2001_0.30_0.40, SB08/2001_0.50_0.60	28-Mar-2019	05-Apr-2019	25-Apr-2019	✓	05-Apr-2019	25-Apr-2019	✓
Soil Glass Jar - Unpreserved (EG035T) SB04/2001_1.00_1.10, SB05/2001_0.45_0.55, SB06/2001_0.30_0.40, SB07/2001_0.40_0.50, SB10/2001_0.30_0.40, SB11/2001_0.30_0.40, MW09/2801_0.40_0.50,	SB04/2002_2.40_2.50, SB05/2002_1.80_1.90, SB06/2002_0.80_0.90, SB09/2001_0.20_0.30, SB10/2801_0.30_0.40, MW09/2001_0.40_0.50, MW09/2003_4.90_5.00	29-Mar-2019	05-Apr-2019	26-Apr-2019	✓	05-Apr-2019	26-Apr-2019	✓



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
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	05-Apr-2019	25-Apr-2019	✔	05-Apr-2019	12-Apr-2019	✔
Soil Glass Jar - Unpreserved (EG048G) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	05-Apr-2019	26-Apr-2019	✔	05-Apr-2019	12-Apr-2019	✔
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	05-Apr-2019	11-Apr-2019	✔	08-Apr-2019	19-Apr-2019	✔
Soil Glass Jar - Unpreserved (EK026SF) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	05-Apr-2019	12-Apr-2019	✔	08-Apr-2019	19-Apr-2019	✔
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	05-Apr-2019	25-Apr-2019	✔	08-Apr-2019	25-Apr-2019	✔
Soil Glass Jar - Unpreserved (EK040T) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	05-Apr-2019	26-Apr-2019	✔	08-Apr-2019	26-Apr-2019	✔
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	04-Apr-2019	11-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
Soil Glass Jar - Unpreserved (EP066-EM) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	04-Apr-2019	12-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068) SB04/2002_2.40_2.50,	SB06/2001_0.30_0.40	29-Mar-2019	05-Apr-2019	12-Apr-2019	✔	08-Apr-2019	15-May-2019	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	03-Apr-2019	04-Apr-2019	✔	04-Apr-2019	04-Apr-2019	✔
Soil Glass Jar - Unpreserved (EP074-UT) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	03-Apr-2019	05-Apr-2019	✔	04-Apr-2019	05-Apr-2019	✔
Soil Glass Jar - Unpreserved (EP074) SB04/2002_2.40_2.50,	SB06/2001_0.30_0.40	29-Mar-2019	05-Apr-2019	05-Apr-2019	✔	05-Apr-2019	05-Apr-2019	✔



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
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	03-Apr-2019	04-Apr-2019	✔	04-Apr-2019	04-Apr-2019	✔
Soil Glass Jar - Unpreserved (EP074-UT) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	03-Apr-2019	05-Apr-2019	✔	04-Apr-2019	05-Apr-2019	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	03-Apr-2019	04-Apr-2019	✔	04-Apr-2019	04-Apr-2019	✔
Soil Glass Jar - Unpreserved (EP074-UT) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	03-Apr-2019	05-Apr-2019	✔	04-Apr-2019	05-Apr-2019	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) MW07/2002_1.00_1.10, MW08/2003_4.85_4.95, MW10/2002_3.90_4.00	MW07/2006_4.80_4.90, MW08/2005_5.60_5.70,	28-Mar-2019	05-Apr-2019	11-Apr-2019	✔	05-Apr-2019	15-May-2019	✔
Soil Glass Jar - Unpreserved (EP075(SIM)) SB04/2002_2.40_2.50, SB06/2001_0.30_0.40, SB09/2001_0.20_0.30, SB10/2801_0.30_0.40, MW09/2801_0.40_0.50,	SB05/2002_1.80_1.90, SB06/2002_0.80_0.90, SB10/2001_0.30_0.40, MW09/2001_0.40_0.50, MW09/2003_4.90_5.00	29-Mar-2019	05-Apr-2019	12-Apr-2019	✔	05-Apr-2019	15-May-2019	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	04-Apr-2019	11-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
Soil Glass Jar - Unpreserved (EP075-EM) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	04-Apr-2019	12-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	04-Apr-2019	11-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
Soil Glass Jar - Unpreserved (EP075-EM) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	04-Apr-2019	12-Apr-2019	✔	04-Apr-2019	14-May-2019	✔



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
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	04-Apr-2019	11-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
Soil Glass Jar - Unpreserved (EP075-EM) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	04-Apr-2019	12-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	04-Apr-2019	11-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
Soil Glass Jar - Unpreserved (EP075-EM) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	04-Apr-2019	12-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	03-Apr-2019	04-Apr-2019	✔	04-Apr-2019	04-Apr-2019	✔
Soil Glass Jar - Unpreserved (EP071-EM) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	04-Apr-2019	11-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
Soil Glass Jar - Unpreserved (EP071) MW08/2003_4.85_4.95		28-Mar-2019	05-Apr-2019	11-Apr-2019	✔	17-Apr-2019	15-May-2019	✔
Soil Glass Jar - Unpreserved (EP080) MW08/2003_4.85_4.95		28-Mar-2019	17-Apr-2019	11-Apr-2019	✖	17-Apr-2019	11-Apr-2019	✖
Soil Glass Jar - Unpreserved (EP074-UT) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	03-Apr-2019	05-Apr-2019	✔	04-Apr-2019	05-Apr-2019	✔
Soil Glass Jar - Unpreserved (EP071-EM) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	04-Apr-2019	12-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
Soil Glass Jar - Unpreserved (EP071) SB04/2002_2.40_2.50,	SB06/2001_0.30_0.40	29-Mar-2019	05-Apr-2019	12-Apr-2019	✔	05-Apr-2019	15-May-2019	✔



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 (EP074-UT) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	03-Apr-2019	04-Apr-2019	✔	04-Apr-2019	04-Apr-2019	✔
Soil Glass Jar - Unpreserved (EP071-EM) MW07/2001_0.50_0.60, SB08/2001_0.50_0.60	MW10/2001_0.30_0.40,	28-Mar-2019	04-Apr-2019	11-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
Soil Glass Jar - Unpreserved (EP071) MW08/2003_4.85_4.95		28-Mar-2019	05-Apr-2019	11-Apr-2019	✔	17-Apr-2019	15-May-2019	✔
Soil Glass Jar - Unpreserved (EP080) MW08/2003_4.85_4.95		28-Mar-2019	17-Apr-2019	11-Apr-2019	✖	17-Apr-2019	11-Apr-2019	✖
Soil Glass Jar - Unpreserved (EP074-UT) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	03-Apr-2019	05-Apr-2019	✔	04-Apr-2019	05-Apr-2019	✔
Soil Glass Jar - Unpreserved (EP071-EM) SB04/2001_1.00_1.10, SB07/2001_0.40_0.50,	SB05/2001_0.45_0.55, SB11/2001_0.30_0.40	29-Mar-2019	04-Apr-2019	12-Apr-2019	✔	04-Apr-2019	14-May-2019	✔
Soil Glass Jar - Unpreserved (EP071) SB04/2002_2.40_2.50,	SB06/2001_0.30_0.40	29-Mar-2019	05-Apr-2019	12-Apr-2019	✔	05-Apr-2019	15-May-2019	✔
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) MW08/2003_4.85_4.95		28-Mar-2019	17-Apr-2019	11-Apr-2019	✖	17-Apr-2019	11-Apr-2019	✖
Soil Glass Jar - Unpreserved (EP080) SB04/2002_2.40_2.50,	SB06/2001_0.30_0.40	29-Mar-2019	05-Apr-2019	12-Apr-2019	✔	05-Apr-2019	12-Apr-2019	✔

Matrix: **SOLID**

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 bulk samples								
Snap Lock Bag: Separate bag received (EA200)		28-Mar-2019	----	----	----	04-Apr-2019	24-Sep-2019	✔
MW07B/ASB01 0.30 0.40 - Potential ACM								

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 Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) MW08/2701, Trip Blank 2	28-Mar-2019	04-Apr-2019	11-Apr-2019	✓	05-Apr-2019	11-Apr-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) MW08/2701, Trip Blank 2	28-Mar-2019	04-Apr-2019	11-Apr-2019	✓	05-Apr-2019	11-Apr-2019	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) MW08/2701, Trip Blank 2	28-Mar-2019	04-Apr-2019	11-Apr-2019	✓	05-Apr-2019	11-Apr-2019	✓



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)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	8	72	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	6	46	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	3	66.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	4	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	4	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	3	66.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	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)							
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
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
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
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).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (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)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	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)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071-EM	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.
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)
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
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)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	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)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
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.
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
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)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

Page : 12 of 12
Work Order : EM1904797 Amendment 1
Client : GOLDER ASSOCIATES
Project : 18113054



Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	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.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	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.
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.

CERTIFICATE OF ANALYSIS

Work Order : **EM1904922**
Client : **GOLDER ASSOCIATES**
Contact : **GOLDER CONTACT**
Address : **P O BOX 6079 Building 7, 570-588 Swan St**
RICHMOND VIC, AUSTRALIA 3122
Telephone : **+61 03 8862 3500**
Project : **18113054**
Order number : **Project Number 18113054**
C-O-C number : **836**
Sampler : **DUNCAN FRASER**
Site : **Geelong**
Quote number : **ME-255-19 - COMPASS**
No. of samples received : **13**
No. of samples analysed : **13**

Page : 1 of 18
Laboratory : Environmental Division Melbourne
Contact : Larissa Burns
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +6138549 9644
Date Samples Received : 04-Apr-2019 10:40
Date Analysis Commenced : 04-Apr-2019
Issue Date : 12-Apr-2019 16:18



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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
Arenie Vijayaratnam	Non-metals prep supervisor	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



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.
- ED041G: Results for EM1904922-010 have been confirmed by re-preparation and re-analysis.
- EG020F: EM1904922 #5, #12 and #13 results for dissolved metal have been confirmed by re-preparation and re-analysis.
- EG035F: EM1904922 #3 Poor matrix spike recovery for dissolved mercury due to sample matrix. Confirmed by re-extraction and re-analysis.



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW22/50020419	MW03/50020419	MW01/50020419	MW01/55020419	MW02/50020419
Client sampling date / time				02-Apr-2019 10:21	04-Apr-2019 09:24	02-Apr-2019 13:06	02-Apr-2019 13:26	02-Apr-2019 15:00
Compound	CAS Number	LOR	Unit	EM1904922-001	EM1904922-002	EM1904922-003	EM1904922-004	EM1904922-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.31	7.47	7.47	7.91	6.71
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	7420	6790	6500	<10	6620
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	816	746	544	<1	459
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.020	0.003	0.001	<0.001	0.018
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.002	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.001	0.018	0.013	<0.001	0.018
Nickel	7440-02-0	0.001	mg/L	0.092	0.060	0.081	<0.001	0.045
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	<0.001	0.001
Zinc	7440-66-6	0.005	mg/L	0.021	0.102	0.039	<0.005	0.098
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.22	0.10	0.04	<0.01	0.04
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.05	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.09	5.15	10.3	<0.01	2.75
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.11	5.20	10.3	<0.01	2.75
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	<5	<5	<5
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	<5	<5	6
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	<5	<5	9
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	<5	<5	63
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW22/50020419	MW03/50020419	MW01/50020419	MW01/55020419	MW02/50020419
Client sampling date / time				02-Apr-2019 10:21	04-Apr-2019 09:24	02-Apr-2019 13:06	02-Apr-2019 13:26	02-Apr-2019 15:00
Compound	CAS Number	LOR	Unit	EM1904922-001	EM1904922-002	EM1904922-003	EM1904922-004	EM1904922-005
				Result	Result	Result	Result	Result
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	<50	<50
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW22/50020419	MW03/50020419	MW01/50020419	MW01/55020419	MW02/50020419
Client sampling date / time				02-Apr-2019 10:21	04-Apr-2019 09:24	02-Apr-2019 13:06	02-Apr-2019 13:26	02-Apr-2019 15:00
Compound	CAS Number	LOR	Unit	EM1904922-001	EM1904922-002	EM1904922-003	EM1904922-004	EM1904922-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	20.2
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<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	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<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	<1.0



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW22/50020419	MW03/50020419	MW01/50020419	MW01/55020419	MW02/50020419
Client sampling date / time				02-Apr-2019 10:21	04-Apr-2019 09:24	02-Apr-2019 13:06	02-Apr-2019 13:26	02-Apr-2019 15:00
Compound	CAS Number	LOR	Unit	EM1904922-001	EM1904922-002	EM1904922-003	EM1904922-004	EM1904922-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<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	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<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	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<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	20.2
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	220
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	300
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	300
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	300
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	140
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	210
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	210
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	180
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	3
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	19
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	82
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	56
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	138
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	160
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	25
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	113	110	106	107	106



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW22/50020419	MW03/50020419	MW01/50020419	MW01/55020419	MW02/50020419
Client sampling date / time				02-Apr-2019 10:21	04-Apr-2019 09:24	02-Apr-2019 13:06	02-Apr-2019 13:26	02-Apr-2019 15:00
Compound	CAS Number	LOR	Unit	EM1904922-001	EM1904922-002	EM1904922-003	EM1904922-004	EM1904922-005
				Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued								
Toluene-D8	2037-26-5	5	%	110	106	107	109	101
4-Bromofluorobenzene	460-00-4	5	%	112	102	102	112	96.3
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	26.4	31.0	29.1	25.6	26.8
2-Chlorophenol-D4	93951-73-6	1.0	%	59.6	62.6	57.5	54.3	51.8
2,4,6-Tribromophenol	118-79-6	1.0	%	63.6	86.0	67.9	35.1	90.0
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	65.4	56.2	94.1	64.5	75.9
Anthracene-d10	1719-06-8	1.0	%	64.8	79.4	91.1	67.9	84.1
4-Terphenyl-d14	1718-51-0	1.0	%	60.8	73.8	82.9	77.2	64.6
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	105	110	106	104	106
Toluene-D8	2037-26-5	2	%	98.9	99.6	100	96.2	94.8
4-Bromofluorobenzene	460-00-4	2	%	106	106	102	98.9	94.2



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW10/50030419	MW07/50030419	MW09/50030419	MW08/50030419	MW08/58030419
Client sampling date / time				03-Apr-2019 11:25	03-Apr-2019 12:46	03-Apr-2019 13:58	03-Apr-2019 14:55	03-Apr-2019 14:56
Compound	CAS Number	LOR	Unit	EM1904922-006	EM1904922-007	EM1904922-009	EM1904922-012	EM1904922-013
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.47	7.47	7.59	7.50	7.57
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	8480	6250	5780	6340	6550
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	705	532	236	396	405
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	0.009	0.005	0.005
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.001	0.001	0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.023	0.017	0.010	0.002	0.023
Nickel	7440-02-0	0.001	mg/L	0.015	0.101	0.169	0.104	0.111
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	0.001	<0.001	0.002
Zinc	7440-66-6	0.005	mg/L	0.089	0.029	0.050	0.009	0.046
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.05	0.04	0.02	0.04
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.03	<0.01	0.02	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	6.22	11.2	0.02	2.56	2.82
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	6.27	11.2	0.02	2.58	2.82
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	<5	<5	<5
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	<5	<5	<5
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	<5	<5	<5
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	<5	<5	<5
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW10/50030419	MW07/50030419	MW09/50030419	MW08/50030419	MW08/58030419
Client sampling date / time				03-Apr-2019 11:25	03-Apr-2019 12:46	03-Apr-2019 13:58	03-Apr-2019 14:55	03-Apr-2019 14:56
Compound	CAS Number	LOR	Unit	EM1904922-006	EM1904922-007	EM1904922-009	EM1904922-012	EM1904922-013
				Result	Result	Result	Result	Result
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	<50	<50
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW10/50030419	MW07/50030419	MW09/50030419	MW08/50030419	MW08/58030419
Client sampling date / time				03-Apr-2019 11:25	03-Apr-2019 12:46	03-Apr-2019 13:58	03-Apr-2019 14:55	03-Apr-2019 14:56
Compound	CAS Number	LOR	Unit	EM1904922-006	EM1904922-007	EM1904922-009	EM1904922-012	EM1904922-013
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<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	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<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	<1.0



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW10/50030419	MW07/50030419	MW09/50030419	MW08/50030419	MW08/58030419
Client sampling date / time				03-Apr-2019 11:25	03-Apr-2019 12:46	03-Apr-2019 13:58	03-Apr-2019 14:55	03-Apr-2019 14:56
Compound	CAS Number	LOR	Unit	EM1904922-006	EM1904922-007	EM1904922-009	EM1904922-012	EM1904922-013
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<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	<0.5
Indeno(1,2,3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<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	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<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	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	90	<50	<50	290	230
C15 - C28 Fraction	----	100	µg/L	210	<100	750	340	280
C29 - C36 Fraction	----	50	µg/L	<50	<50	140	50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	300	<50	890	680	510
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	60	50
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	60	50
>C10 - C16 Fraction	----	100	µg/L	100	<100	<100	300	240
>C16 - C34 Fraction	----	100	µg/L	220	<100	850	360	280
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	320	<100	850	660	520
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	100	<100	<100	290	230
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	10	9
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	115	107	111	115	112



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW10/50030419	MW07/50030419	MW09/50030419	MW08/50030419	MW08/58030419
Client sampling date / time				03-Apr-2019 11:25	03-Apr-2019 12:46	03-Apr-2019 13:58	03-Apr-2019 14:55	03-Apr-2019 14:56
Compound	CAS Number	LOR	Unit	EM1904922-006	EM1904922-007	EM1904922-009	EM1904922-012	EM1904922-013
				Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued								
Toluene-D8	2037-26-5	5	%	111	105	109	113	112
4-Bromofluorobenzene	460-00-4	5	%	108	102	109	110	109
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	21.6	20.8	30.0	26.8	25.5
2-Chlorophenol-D4	93951-73-6	1.0	%	52.0	49.8	65.1	57.9	46.6
2,4,6-Tribromophenol	118-79-6	1.0	%	53.9	51.7	86.1	74.5	67.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	48.2	60.2	77.6	75.4	61.6
Anthracene-d10	1719-06-8	1.0	%	59.4	64.3	83.1	73.8	70.8
4-Terphenyl-d14	1718-51-0	1.0	%	55.8	65.1	86.4	91.6	66.2
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	115	106	103	107	104
Toluene-D8	2037-26-5	2	%	104	98.5	97.8	101	100
4-Bromofluorobenzene	460-00-4	2	%	99.7	103	99.6	98.0	98.7



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW10/57030419	MW09/55030419	MW09/57030419	----	----
Client sampling date / time					03-Apr-2019 12:52	03-Apr-2019 14:00	03-Apr-2019 14:26	----	----
Compound	CAS Number	LOR	Unit		EM1904922-008	EM1904922-010	EM1904922-011	-----	-----
				Result	Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		----	4.41	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		----	<10	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		----	3	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		----	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L		----	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		----	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		----	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		----	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		----	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	<0.0001	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		----	<0.01	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		----	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		----	<0.01	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		----	<5	----	----	----
Isopropylbenzene	98-82-8	5	µg/L		----	<5	----	----	----
n-Propylbenzene	103-65-1	5	µg/L		----	<5	----	----	----
1,3,5-Trimethylbenzene	108-67-8	5	µg/L		----	<5	----	----	----
sec-Butylbenzene	135-98-8	5	µg/L		----	<5	----	----	----
1,2,4-Trimethylbenzene	95-63-6	5	µg/L		----	<5	----	----	----
tert-Butylbenzene	98-06-6	5	µg/L		----	<5	----	----	----
p-Isopropyltoluene	99-87-6	5	µg/L		----	<5	----	----	----
n-Butylbenzene	104-51-8	5	µg/L		----	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW10/57030419	MW09/55030419	MW09/57030419	----	----
Client sampling date / time					03-Apr-2019 12:52	03-Apr-2019 14:00	03-Apr-2019 14:26	----	----
Compound	CAS Number	LOR	Unit		EM1904922-008	EM1904922-010	EM1904922-011	-----	-----
					Result	Result	Result	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L		----	<50	----	----	----
2-Butanone (MEK)	78-93-3	50	µg/L		----	<50	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L		----	<50	----	----	----
2-Hexanone (MBK)	591-78-6	50	µg/L		----	<50	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L		----	<5	----	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L		----	<5	----	----	----
1,2-Dichloropropane	78-87-5	5	µg/L		----	<5	----	----	----
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L		----	<5	----	----	----
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L		----	<5	----	----	----
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L		----	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		----	<50	----	----	----
Chloromethane	74-87-3	50	µg/L		----	<50	----	----	----
Vinyl chloride	75-01-4	50	µg/L		----	<50	----	----	----
Bromomethane	74-83-9	50	µg/L		----	<50	----	----	----
Chloroethane	75-00-3	50	µg/L		----	<50	----	----	----
Trichlorofluoromethane	75-69-4	50	µg/L		----	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		----	<5	----	----	----
Iodomethane	74-88-4	5	µg/L		----	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		----	<5	----	----	----
1,1-Dichloroethane	75-34-3	5	µg/L		----	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		----	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		----	<5	----	----	----
1,1-Dichloropropylene	563-58-6	5	µg/L		----	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		----	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		----	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		----	<5	----	----	----
Dibromomethane	74-95-3	5	µg/L		----	<5	----	----	----
1,1,2-Trichloroethane	79-00-5	5	µg/L		----	<5	----	----	----
1,3-Dichloropropane	142-28-9	5	µg/L		----	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		----	<5	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L		----	<5	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				MW10/57030419	MW09/55030419	MW09/57030419	----	----
Client sampling date / time				03-Apr-2019 12:52	03-Apr-2019 14:00	03-Apr-2019 14:26	----	----
Compound	CAS Number	LOR	Unit	EM1904922-008	EM1904922-010	EM1904922-011	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	----	<5	----	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	----	<5	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	----	<5	----	----	----
1,2,3-Trichloropropane	96-18-4	5	µg/L	----	<5	----	----	----
Pentachloroethane	76-01-7	5	µg/L	----	<5	----	----	----
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	----	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	<5	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	<5	----	----	----
Bromobenzene	108-86-1	5	µg/L	----	<5	----	----	----
2-Chlorotoluene	95-49-8	5	µg/L	----	<5	----	----	----
4-Chlorotoluene	106-43-4	5	µg/L	----	<5	----	----	----
1,3-Dichlorobenzene	541-73-1	5	µg/L	----	<5	----	----	----
1,4-Dichlorobenzene	106-46-7	5	µg/L	----	<5	----	----	----
1,2-Dichlorobenzene	95-50-1	5	µg/L	----	<5	----	----	----
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	----	<5	----	----	----
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	----	<5	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	----	<5	----	----	----
Bromodichloromethane	75-27-4	5	µg/L	----	<5	----	----	----
Dibromochloromethane	124-48-1	5	µg/L	----	<5	----	----	----
Bromoform	75-25-2	5	µg/L	----	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	----	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	----	<1.0	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				MW10/57030419	MW09/55030419	MW09/57030419	----	----
Client sampling date / time				03-Apr-2019 12:52	03-Apr-2019 14:00	03-Apr-2019 14:26	----	----
Compound	CAS Number	LOR	Unit	EM1904922-008	EM1904922-010	EM1904922-011	-----	-----
				Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	----	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	----	<1.0	----	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	----	<1.0	----	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	----	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	----	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	----	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	----	102	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW10/57030419	MW09/55030419	MW09/57030419	----	----
Client sampling date / time					03-Apr-2019 12:52	03-Apr-2019 14:00	03-Apr-2019 14:26	----	----
Compound	CAS Number	LOR	Unit		EM1904922-008	EM1904922-010	EM1904922-011	-----	-----
					Result	Result	Result	----	----
EP074S: VOC Surrogates - Continued									
Toluene-D8	2037-26-5	5	%		----	100	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		----	97.9	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	22.0	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	47.4	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	49.3	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	51.0	----	----	----
Anthracene-d10	1719-06-8	1.0	%		----	60.5	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	77.0	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		100.0	102	97.0	----	----
Toluene-D8	2037-26-5	2	%		93.4	94.3	96.7	----	----
4-Bromofluorobenzene	460-00-4	2	%		96.1	97.5	98.0	----	----



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

QUALITY CONTROL REPORT

Work Order	: EM1904922	Page	: 1 of 13
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Melbourne
Contact	: GOLDER CONTACT	Contact	: Larissa Burns
Address	: P O BOX 6079 Building 7, 570-588 Swan St RICHMOND VIC, AUSTRALIA 3122	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 8862 3500	Telephone	: +6138549 9644
Project	: 18113054	Date Samples Received	: 04-Apr-2019
Order number	: Project Number 18113054	Date Analysis Commenced	: 04-Apr-2019
C-O-C number	: 836	Issue Date	: 12-Apr-2019
Sampler	: DUNCAN FRASER		
Site	: Geelong		
Quote number	: ME-255-19 - COMPASS		
No. of samples received	: 13		
No. of samples analysed	: 13		



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>
Arenie Vijayaratham	Non-metals prep supervisor	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 2278628)									
EM1904922-002	MW03/50020419	EA005-P: pH Value	----	0.01	pH Unit	7.47	7.45	0.268	0% - 20%
EM1904570-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.81	5.76	0.864	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 2278631)									
EM1904935-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.94	6.61	4.87	0% - 20%
EM1904958-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.30	7.24	0.825	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 2279817)									
EM1904570-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	5750	6210	7.66	0% - 20%
EM1904932-004	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	<10	0.00	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 2281815)									
EM1904888-013	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	194	196	1.02	0% - 50%
EM1904927-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6720	6980	3.66	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 2286114)									
EM1904922-002	MW03/50020419	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6790	6700	1.44	0% - 20%
EM1904972-023	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	406	406	0.00	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2278522)									
EM1904916-005	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	14	14	0.00	0% - 50%
EM1904473-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	174	179	2.81	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2278525)									
EM1904922-013	MW08/58030419	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	405	422	4.26	0% - 20%
EM1904932-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	109	113	3.15	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2279605)									
EM1904473-001	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	0.004	0.004	0.00	No Limit

Page : 3 of 13
 Work Order : EM1904922
 Client : GOLDER ASSOCIATES
 Project : 18113054



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 (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2279605) - continued									
EM1904473-001	Anonymous	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	0.006	0.005	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.016	0.015	6.90	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.065	0.063	2.37	0% - 50%
EM1904864-004	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	0.004	0.004	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.014	0.014	0.00	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.055	0.052	6.33	0% - 50%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2279608)									
EM1904922-002	MW03/50020419	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	0.003	0.003	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	0.018	0.018	0.00	0% - 50%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.060	0.059	2.42	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.102	0.103	0.00	0% - 20%
EM1904922-013	MW08/58030419	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	0.005	0.005	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	0.023	0.023	0.00	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.111	0.109	1.78	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.046	0.046	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 2279607)									
EM1904473-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1904864-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 2279609)									
EM1904922-002	MW03/50020419	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1904922-013	MW08/58030419	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 2281628)									
EM1904865-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.11	0.10	13.7	0% - 50%
EM1904927-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	37.4	38.8	3.65	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 2281636)									
EM1904922-006	MW10/50030419	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.04	0.00	No Limit
EM1904958-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.02	71.8	No Limit

Page : 4 of 13
 Work Order : EM1904922
 Client : GOLDER ASSOCIATES
 Project : 18113054



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 (%)
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2278521)									
EM1903599-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1904473-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2278524)									
EM1904922-007	MW07/50030419	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.03	0.03	0.00	No Limit
EM1904927-005	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.02	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2281629)									
EM1904865-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	0.00	No Limit
EM1904927-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.02	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2281637)									
EM1904922-006	MW10/50030419	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	6.27	6.09	2.89	0% - 20%
EM1904958-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	4.86	4.61	5.21	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit



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 (%)
EP074C: Sulfonated Compounds (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EP074D: Fumigants (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit



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 (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2281023) - continued									
EM1904922-001	MW22/50020419	EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit



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 (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 2281023) - continued									
EM1904922-013	MW08/58030419	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2281022)									
EM1904922-001	MW22/50020419	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1904922-013	MW08/58030419	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2281022)									
EM1904922-001	MW22/50020419	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1904922-013	MW08/58030419	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	50	50	0.00	No Limit
EP080: BTEXN (QC Lot: 2281022)									
EM1904922-001	MW22/50020419	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
EM1904922-013	MW08/58030419	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	9	9	0.00	No Limit		

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.

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
	Spike	Spike Recovery (%)	Recovery Limits (%)	
	Concentration	LCS	Low	High
Result				
<10	2000 mg/L	99.8	94	107
<10	293 mg/L	101	90	110
<10	2000 mg/L	100	94	107
<10	293 mg/L	104	90	110
<10	2000 mg/L	99.5	94	107
<10	293 mg/L	102	90	110
<1	25 mg/L	105	86	115
<1	100 mg/L	104	86	115
<1	25 mg/L	105	86	115
<1	100 mg/L	104	86	115
<0.001	0.1 mg/L	96.2	91	107
<0.0001	0.1 mg/L	92.9	84	104
<0.001	0.1 mg/L	96.9	83	103
<0.001	0.1 mg/L	91.8	82	103
<0.001	0.1 mg/L	97.0	83	105
<0.001	0.1 mg/L	94.4	82	106
<0.005	0.1 mg/L	105	85	109
<0.001	0.1 mg/L	99.2	91	107
<0.0001	0.1 mg/L	91.9	84	104
<0.001	0.1 mg/L	98.0	83	103
<0.001	0.1 mg/L	91.8	82	103
<0.001	0.1 mg/L	96.3	83	105
<0.001	0.1 mg/L	91.2	82	106
<0.005	0.1 mg/L	99.0	85	109
<0.0001	0.01 mg/L	81.0	76	114

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
EG035F: Dissolved Mercury by FIMS (QCLot: 2279609) - continued								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	85.8	76	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2281628)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	98.6	87	117
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2281636)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	103	87	117
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2278521)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	92	111
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2278524)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	98.7	92	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2281629)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	94.9	93	120
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2281637)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	93	120
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2281023)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	107	79	116
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	20 µg/L	104	72	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	20 µg/L	95.8	66	116
EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	20 µg/L	98.3	69	114
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	20 µg/L	98.2	67	115
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	20 µg/L	98.2	70	113
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	20 µg/L	102	70	115
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	20 µg/L	94.4	67	116
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	20 µg/L	87.4	60	116
EP074B: Oxygenated Compounds (QCLot: 2281023)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	200 µg/L	101	68	123
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	200 µg/L	86.4	68	132
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	200 µg/L	100	75	130
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	200 µg/L	98.5	74	130
EP074C: Sulfonated Compounds (QCLot: 2281023)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	20 µg/L	90.1	55	125
EP074D: Fumigants (QCLot: 2281023)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	20 µg/L	104	65	120
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	20 µg/L	104	78	116
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	20 µg/L	102	76	112
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	20 µg/L	99.8	76	112
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	20 µg/L	109	79	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 2281023)								

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

Result

Concentration

LCS

Low

High

EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	200 µg/L	84.4	50	139
EP074: Chloromethane	74-87-3	50	µg/L	<50	200 µg/L	96.0	59	135
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	96.9	53	135
EP074: Bromomethane	74-83-9	50	µg/L	<50	200 µg/L	86.4	52	125
EP074: Chloroethane	75-00-3	50	µg/L	<50	200 µg/L	107	62	128
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	200 µg/L	99.8	62	125
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	99.0	63	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	20 µg/L	66.2	31	126
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	97.8	68	119
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	20 µg/L	103	74	119
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	105	77	118
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	104	68	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	20 µg/L	101	66	118
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	100	62	117
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	109	81	117
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	99.0	67	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	20 µg/L	103	80	116
EP074: 1,1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	110	84	117
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	20 µg/L	108	82	118
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	102	67	120
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	110	76	112
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	20 µg/L	105	71	121
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	20 µg/L	96.4	68	116
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	108	81	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	20 µg/L	110	80	123
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	20 µg/L	99.2	70	110
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	20 µg/L	98.0	74	113
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	91.9	62	128

EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	105	81	116
EP074: Bromobenzene	108-86-1	5	µg/L	<5	20 µg/L	102	78	114
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	20 µg/L	102	72	115
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	20 µg/L	93.7	71	114
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	20 µg/L	96.5	74	116
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	100	75	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	102	81	113
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	91.8	64	122
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	20 µg/L	99.8	73	120

EP074G: Trihalomethanes (QCLot: 2281023)



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				
EP074G: Trihalomethanes (QCLot: 2281023) - continued								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	107	79	117
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	20 µg/L	105	78	113
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	20 µg/L	108	76	112
EP074: Bromoform	75-25-2	5	µg/L	<5	20 µg/L	101	73	112
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2277257)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	70.6	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	90.2	50	117
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	80.1	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	82.6	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	80.9	59	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	73.7	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	90.1	61	120
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	69.7	56	120
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	62.6	53	120
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	63.2	57	122
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	73.0	56	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	92.8	59	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	95.9	54	124
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	88.2	55	124
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	88.4	54	124
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	104	56	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2277255)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4030 µg/L	80.9	50	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	15600 µg/L	87.8	55	132
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7820 µg/L	85.3	55	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2281022)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	85.4	65	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2277255)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5960 µg/L	80.9	53	129
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	20700 µg/L	86.0	56	131
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1520 µg/L	79.5	53	136
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2281022)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	84.2	64	124
EP080: BTEXN (QCLot: 2281022)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	95.7	69	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	93.0	73	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	92.6	71	125

Matrix Spike (MS) Report

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: 2278522)							
EM1904473-021	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	92.0	70	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2278525)							
EM1904927-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	72.0	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 2279605)							
EM1904473-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	99.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	95.3	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	97.8	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	91.4	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	93.4	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	95.4	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	97.0	75	131
EG020F: Dissolved Metals by ICP-MS (QCLot: 2279608)							
EM1904922-002	MW03/50020419	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	104	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	95.6	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	94.8	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	91.0	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.0	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	91.7	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	92.0	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 2279607)							
EM1904473-021	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	70.7	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 2279609)							
EM1904922-003	MW01/50020419	EG035F: Mercury	7439-97-6	0.01 mg/L	# 28.1	70	120
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2281628)							



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
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2281628) - continued							
EM1904865-004	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	97.6	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2281636)							
EM1904922-007	MW07/50030419	EK055G: Ammonia as N	7664-41-7	1 mg/L	80.2	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2278521)							
EM1903599-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	95.9	80	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2278524)							
EM1904922-009	MW09/50030419	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	97.0	80	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2281629)							
EM1904865-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	84.2	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2281637)							
EM1904922-007	MW07/50030419	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 2281023)							
EM1904922-002	MW03/50020419	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	109	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	99.2	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 2281023)							
EM1904922-002	MW03/50020419	EP074: Chlorobenzene	108-90-7	20 µg/L	111	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2281022)							
EM1904922-002	MW03/50020419	EP080: C6 - C9 Fraction	----	280 µg/L	81.5	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2281022)							
EM1904922-002	MW03/50020419	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	79.2	44	122
EP080: BTEXN (QCLot: 2281022)							
EM1904922-002	MW03/50020419	EP080: Benzene	71-43-2	20 µg/L	109	68	130
		EP080: Toluene	108-88-3	20 µg/L	105	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1904922	Page	: 1 of 12
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Melbourne
Contact	: GOLDER CONTACT	Telephone	: +6138549 9644
Project	: 18113054	Date Samples Received	: 04-Apr-2019
Site	: Geelong	Issue Date	: 12-Apr-2019
Sampler	: DUNCAN FRASER	No. of samples received	: 13
Order number	: Project Number 18113054	No. of samples analysed	: 13

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	EM1904922--003	MW01/50020419	Mercury	7439-97-6	28.1 %	70-120%	Recovery less than lower data quality objective
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EM1904922--007	MW07/50030419	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
MW22/50020419,	MW01/50020419,	----	----	----	05-Apr-2019	02-Apr-2019	3
MW01/55020419,	MW02/50020419						
Clear Plastic Bottle - Natural							
MW10/50030419,	MW07/50030419,	----	----	----	05-Apr-2019	03-Apr-2019	2
MW09/50030419,	MW09/55030419,						
MW08/50030419,	MW08/58030419						
Clear Plastic Bottle - Natural							
MW03/50020419		----	----	----	05-Apr-2019	04-Apr-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	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	13	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	16	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: **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	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	05-Apr-2019	02-Apr-2019	✖
Clear Plastic Bottle - Natural (EA005-P) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	05-Apr-2019	03-Apr-2019	✖
Clear Plastic Bottle - Natural (EA005-P) MW03/50020419		04-Apr-2019	----	----	----	05-Apr-2019	04-Apr-2019	✖
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	08-Apr-2019	09-Apr-2019	✓
Clear Plastic Bottle - Natural (EA015H) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	09-Apr-2019	10-Apr-2019	✓
Clear Plastic Bottle - Natural (EA015H) MW03/50020419		04-Apr-2019	----	----	----	10-Apr-2019	11-Apr-2019	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	05-Apr-2019	30-Apr-2019	✓
Clear Plastic Bottle - Natural (ED041G) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	05-Apr-2019	01-May-2019	✓
Clear Plastic Bottle - Natural (ED041G) MW03/50020419		04-Apr-2019	----	----	----	05-Apr-2019	02-May-2019	✓
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	05-Apr-2019	29-Sep-2019	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	05-Apr-2019	30-Sep-2019	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MW03/50020419		04-Apr-2019	----	----	----	05-Apr-2019	01-Oct-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
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	08-Apr-2019	30-Apr-2019	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	08-Apr-2019	01-May-2019	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW03/50020419		04-Apr-2019	----	----	----	08-Apr-2019	02-May-2019	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	09-Apr-2019	30-Apr-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	09-Apr-2019	01-May-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) MW03/50020419		04-Apr-2019	----	----	----	09-Apr-2019	02-May-2019	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	04-Apr-2019	04-Apr-2019	✓
Clear Plastic Bottle - Natural (EK057G) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	05-Apr-2019	05-Apr-2019	✓
Clear Plastic Bottle - Natural (EK057G) MW03/50020419		04-Apr-2019	----	----	----	05-Apr-2019	06-Apr-2019	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	08-Apr-2019	30-Apr-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	08-Apr-2019	01-May-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) MW03/50020419		04-Apr-2019	----	----	----	08-Apr-2019	02-May-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
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-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
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	09-Apr-2019	✔	09-Apr-2019	18-May-2019	✔
Amber Glass Bottle - Unpreserved (EP075(SIM)) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	10-Apr-2019	✔	09-Apr-2019	18-May-2019	✔
Amber Glass Bottle - Unpreserved (EP075(SIM)) MW03/50020419		04-Apr-2019	08-Apr-2019	11-Apr-2019	✔	09-Apr-2019	18-May-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 Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	09-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	10-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW03/50020419		04-Apr-2019	08-Apr-2019	11-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✓	09-Apr-2019	16-Apr-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW10/50030419, MW10/57030419, MW09/55030419, MW08/50030419,	MW07/50030419, MW09/50030419, MW09/57030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✓	09-Apr-2019	17-Apr-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✓	09-Apr-2019	18-Apr-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	09-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	10-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW03/50020419		04-Apr-2019	08-Apr-2019	11-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✓	09-Apr-2019	16-Apr-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW10/50030419, MW10/57030419, MW09/55030419, MW08/50030419,	MW07/50030419, MW09/50030419, MW09/57030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✓	09-Apr-2019	17-Apr-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✓	09-Apr-2019	18-Apr-2019	✓

Page : 8 of 12
 Work Order : EM1904922
 Client : GOLDER ASSOCIATES
 Project : 18113054



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: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) MW10/50030419, MW10/57030419, MW09/55030419, MW08/50030419,	MW07/50030419, MW09/50030419, MW09/57030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔



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)							
Ammonia as N by Discrete analyser	EK055G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	13	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	16	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	59	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	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)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	13	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	16	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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)
Volatile Organic Compounds	EP074	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. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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.

Golder Associates Pty Ltd (Richmond)
570-588 Swan Street
Richmond
VIC 3121



NATA Accredited
Accreditation Number 1261
Site Number 1254

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.

Attention: Duncan Fraser

Report 649328-S-V2
Project name THOMPSON ROAD NORTH GEELONG
Project ID 18113054
Received Date Apr 04, 2019

Client Sample ID			SB10/2901	MW09/2901	TP13/1906
Sample Matrix			Soil	Soil	Soil
Eurofins mgt Sample No.			M19-Ap08764	M19-Ap08765	M19-Ap08766
Date Sampled			Mar 29, 2019	Mar 29, 2019	Mar 29, 2019
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	114	93	105
p-Terphenyl-d14 (surr.)	1	%	141	106	123
Heavy Metals					
Arsenic	2	mg/kg	69	< 2	21
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	98	27	20
Copper	5	mg/kg	< 5	49	< 5
Lead	5	mg/kg	26	< 5	7.2
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	37	150	9.4
Zinc	5	mg/kg	41	76	8.0
% Moisture	1	%	22	5.2	11

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Polycyclic Aromatic Hydrocarbons	Melbourne	Apr 08, 2019	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Melbourne	Apr 08, 2019	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Melbourne	Apr 05, 2019	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name: Golder Associates Pty Ltd (Richmond)
Address: 570-588 Swan Street
Richmond
VIC 3121

Project Name: THOMPSON ROAD NORTH GEELONG
Project ID: 18113054

Order No.:
Report #: 649328
Phone: (03) 8862 3500
Fax: (03) 8862 3501

Received: Apr 4, 2019 3:21 PM
Due: Apr 11, 2019
Priority: 5 Day
Contact Name: Duncan Fraser

Eurofins | mgt Analytical Services Manager : Michael Morrison

Sample Detail						Polycyclic Aromatic Hydrocarbons	Metals M8	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
External Laboratory								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID			
1	SB10/2901	Mar 29, 2019		Soil	M19-Ap08764	X	X	X
2	MW09/2901	Mar 29, 2019		Soil	M19-Ap08765	X	X	X
3	TP13/1906	Mar 29, 2019		Soil	M19-Ap08766	X	X	X
Test Counts						3	3	3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure, April 2011 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.2 2018
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.2 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	95			70-130	Pass	
Acenaphthylene	%	103			70-130	Pass	
Anthracene	%	96			70-130	Pass	
Benz(a)anthracene	%	95			70-130	Pass	
Benzo(a)pyrene	%	73			70-130	Pass	
Benzo(b&j)fluoranthene	%	72			70-130	Pass	
Benzo(g,h,i)perylene	%	80			70-130	Pass	
Benzo(k)fluoranthene	%	73			70-130	Pass	
Chrysene	%	88			70-130	Pass	
Dibenz(a,h)anthracene	%	96			70-130	Pass	
Fluoranthene	%	94			70-130	Pass	
Fluorene	%	97			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	86			70-130	Pass	
Naphthalene	%	97			70-130	Pass	
Phenanthrene	%	97			70-130	Pass	
Pyrene	%	92			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	101			80-120	Pass	
Cadmium	%	101			80-120	Pass	
Chromium	%	111			80-120	Pass	
Copper	%	111			80-120	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead			%	114			80-120	Pass	
Mercury			%	106			75-125	Pass	
Nickel			%	108			80-120	Pass	
Zinc			%	106			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M19-Ap08779	NCP	%	86			70-130	Pass	
Acenaphthylene	M19-Ap08779	NCP	%	91			70-130	Pass	
Anthracene	M19-Ap08779	NCP	%	90			70-130	Pass	
Benz(a)anthracene	M19-Ap08779	NCP	%	104			70-130	Pass	
Benzo(a)pyrene	M19-Ap08779	NCP	%	79			70-130	Pass	
Benzo(b&j)fluoranthene	M19-Ap08779	NCP	%	81			70-130	Pass	
Benzo(g,h,i)perylene	M19-Ap08779	NCP	%	93			70-130	Pass	
Benzo(k)fluoranthene	M19-Ap08779	NCP	%	78			70-130	Pass	
Chrysene	M19-Ap08779	NCP	%	99			70-130	Pass	
Dibenz(a,h)anthracene	M19-Ap08779	NCP	%	109			70-130	Pass	
Fluoranthene	M19-Ap08779	NCP	%	100			70-130	Pass	
Fluorene	M19-Ap08779	NCP	%	87			70-130	Pass	
Indeno(1,2,3-cd)pyrene	M19-Ap08779	NCP	%	99			70-130	Pass	
Naphthalene	M19-Ap08779	NCP	%	87			70-130	Pass	
Phenanthrene	M19-Ap08779	NCP	%	89			70-130	Pass	
Pyrene	M19-Ap08779	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M19-Ap08728	NCP	%	106			75-125	Pass	
Cadmium	M19-Ap08728	NCP	%	121			75-125	Pass	
Chromium	M19-Ap08728	NCP	%	94			75-125	Pass	
Copper	M19-Ap08728	NCP	%	106			75-125	Pass	
Lead	M19-Ap08728	NCP	%	112			75-125	Pass	
Mercury	M19-Ap08728	NCP	%	115			70-130	Pass	
Nickel	M19-Ap08728	NCP	%	102			75-125	Pass	
Zinc	M19-Ap08728	NCP	%	80			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M19-Ap08727	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	M19-Ap08727	NCP	mg/kg	< 0.4	0.4	2.0	30%	Pass	
Chromium	M19-Ap08727	NCP	mg/kg	45	43	4.0	30%	Pass	
Copper	M19-Ap08727	NCP	mg/kg	47	46	3.0	30%	Pass	
Lead	M19-Ap08727	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	M19-Ap08727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M19-Ap08727	NCP	mg/kg	110	120	9.0	30%	Pass	
Zinc	M19-Ap08727	NCP	mg/kg	72	71	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M19-Ap08762	NCP	%	17	17	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Benzo(a)pyrene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	M19-Ap08766	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Comments

V2: This report has been amended with updated client Id and project number as requested

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Michael Morrison	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Golder Associates Pty Ltd (Richmond)
570-588 Swan Street
Richmond
VIC 3121



NATA Accredited
Accreditation Number 1261
Site Number 1254

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.

Attention: **Duncan Fraser**

Report **649331-W-V2**
 Project name THOMPSON ROAD NORTH GEELONG
 Project ID 18113054
 Received Date Apr 04, 2019

Client Sample ID			MW08/5903041
Sample Matrix			Water
Eurofins mgt Sample No.			M19-Ap08767
Date Sampled			Apr 03, 2019
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1
Monocyclic Aromatic Hydrocarbons			
Benzene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Styrene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
Total MAH*	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	96
Toluene-d8 (surr.)	1	%	90
Volatile Organics			
1.1-Dichloroethane	0.001	mg/L	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001
1.3.5-Trimethylbenzene	0.001	mg/L	0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001
2-Butanone (MEK)	0.001	mg/L	< 0.001

Client Sample ID			MW08/59030419
Sample Matrix			Water
Eurofins mgt Sample No.			M19-Ap08767
Date Sampled			Apr 03, 2019
Test/Reference	LOR	Unit	
Volatile Organics			
2-Propanone (Acetone)	0.001	mg/L	< 0.001
4-Chlorotoluene	0.001	mg/L	< 0.001
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001
Allyl chloride	0.001	mg/L	< 0.001
Benzene	0.001	mg/L	< 0.001
Bromobenzene	0.001	mg/L	< 0.001
Bromochloromethane	0.001	mg/L	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001
Bromoform	0.001	mg/L	< 0.001
Bromomethane	0.001	mg/L	< 0.001
Carbon disulfide	0.001	mg/L	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001
Chloroethane	0.001	mg/L	< 0.001
Chloroform	0.005	mg/L	< 0.005
Chloromethane	0.001	mg/L	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001
Dibromomethane	0.001	mg/L	< 0.001
Dichlorodifluoromethane	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
Iodomethane	0.001	mg/L	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
Methylene Chloride	0.001	mg/L	< 0.001
o-Xylene	0.001	mg/L	< 0.001
Styrene	0.001	mg/L	< 0.001
Tetrachloroethene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001
Trichloroethene	0.001	mg/L	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
Total MAH*	0.003	mg/L	< 0.003
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	< 0.005
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	< 0.005
4-Bromofluorobenzene (surr.)	1	%	96
Toluene-d8 (surr.)	1	%	90
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	0.06
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	0.06
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1

Client Sample ID			MW08/5903041
Sample Matrix			Water
Eurofins mgt Sample No.			M19-Ap08767
Date Sampled			Apr 03, 2019
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	< 0.001
Fluorene	0.001	mg/L	< 0.001
Indeno(1,2,3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	0.005
Phenanthrene	0.001	mg/L	< 0.001
Pyrene	0.001	mg/L	< 0.001
Total PAH*	0.001	mg/L	0.005
2-Fluorobiphenyl (surr.)	1	%	91
p-Terphenyl-d14 (surr.)	1	%	84
Ammonia (as N)	0.01	mg/L	< 0.01
Nitrate (as N)	0.02	mg/L	2.8
pH (at 25°C)	0.1	pH Units	7.8
Sulphate (as SO ₄)	5	mg/L	350
Total Dissolved Solids Dried at 180°C	10	mg/L	8800
Heavy Metals			
Arsenic (filtered)	0.001	mg/L	0.004
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	0.002
Lead (filtered)	0.001	mg/L	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	0.093
Zinc (filtered)	0.005	mg/L	0.011

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Apr 06, 2019	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Apr 06, 2019	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Apr 06, 2019	7 Day
Monocyclic Aromatic Hydrocarbons - Method: USEPA 8260	Melbourne	Apr 06, 2019	7 Day
Volatile Organics - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices	Melbourne	Apr 06, 2019	7 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Melbourne	Apr 06, 2019	7 Day
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Apr 06, 2019	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Apr 06, 2019	28 Day
pH (at 25°C) - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 06, 2019	0 Hours
Sulphate (as SO4) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Apr 06, 2019	28 Day
Total Dissolved Solids Dried at 180°C - Method: LTM-INO-4170 Total Dissolved Solids in Water	Melbourne	Apr 11, 2019	7 Day
Metals M8 filtered - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Apr 06, 2019	28 Day

Company Name: Golder Associates Pty Ltd (Richmond)
Address: 570-588 Swan Street
Richmond
VIC 3121

Project Name: THOMPSON ROAD NORTH GEELONG
Project ID: 18113054

Order No.:
Report #: 649331
Phone: (03) 8862 3500
Fax: (03) 8862 3501

Received: Apr 4, 2019 12:30 PM
Due: Apr 11, 2019
Priority: 5 Day
Contact Name: Duncan Fraser

Eurofins | mgt Analytical Services Manager : Michael Morrison

Sample Detail						Ammonia (as N)	Nitrate (as N)	pH (at 25°C)	Sulphate (as SO ₄)	Total Dissolved Solids Dried at 180°C	Polycyclic Aromatic Hydrocarbons	Metals M8 filtered	Monocyclic Aromatic Hydrocarbons	Volatile Organics	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217															
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
External Laboratory															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
1	MW08/59030419	Apr 03, 2019		Water	M19-Ap08767	X	X	X	X	X	X	X	X	X	X
Test Counts						1	1	1	1	1	1	1	1	1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure, April 2011 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.2 2018
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.2 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
Monocyclic Aromatic Hydrocarbons							
Benzene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
Isopropyl benzene (Cumene)	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Styrene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.1-Dichloroethene	mg/L	< 0.001			0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.3-Trichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.4-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.3.5-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
2-Butanone (MEK)	mg/L	< 0.001			0.001	Pass	
2-Propanone (Acetone)	mg/L	< 0.001			0.001	Pass	
4-Chlorotoluene	mg/L	< 0.001			0.001	Pass	
4-Methyl-2-pentanone (MIBK)	mg/L	< 0.001			0.001	Pass	
Allyl chloride	mg/L	< 0.001			0.001	Pass	
Bromobenzene	mg/L	< 0.001			0.001	Pass	
Bromochloromethane	mg/L	< 0.001			0.001	Pass	
Bromodichloromethane	mg/L	< 0.001			0.001	Pass	
Bromoform	mg/L	< 0.001			0.001	Pass	
Bromomethane	mg/L	< 0.001			0.001	Pass	
Carbon disulfide	mg/L	< 0.001			0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001			0.001	Pass	
Chlorobenzene	mg/L	< 0.001			0.001	Pass	
Chloroethane	mg/L	< 0.001			0.001	Pass	
Chloroform	mg/L	< 0.005			0.005	Pass	
Chloromethane	mg/L	< 0.001			0.001	Pass	
cis-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
cis-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dibromochloromethane	mg/L	< 0.001			0.001	Pass	
Dibromomethane	mg/L	< 0.001			0.001	Pass	
Dichlorodifluoromethane	mg/L	< 0.001			0.001	Pass	
Iodomethane	mg/L	< 0.001			0.001	Pass	
Methylene Chloride	mg/L	< 0.001			0.001	Pass	
Tetrachloroethene	mg/L	< 0.001			0.001	Pass	
trans-1,2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
trans-1,3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Trichloroethene	mg/L	< 0.001			0.001	Pass	
Trichlorofluoromethane	mg/L	< 0.001			0.001	Pass	
Vinyl chloride	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Total Dissolved Solids Dried at 180°C	mg/L	< 10			10	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	111			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	%	77			70-130	Pass	
LCS - % Recovery							
Monocyclic Aromatic Hydrocarbons							
Benzene	%	97			70-130	Pass	
Ethylbenzene	%	89			70-130	Pass	
m&p-Xylenes	%	80			70-130	Pass	
Toluene	%	102			70-130	Pass	
Xylenes - Total	%	83			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	104			70-130	Pass	
1.1.1-Trichloroethane	%	83			70-130	Pass	
1.2-Dichlorobenzene	%	96			70-130	Pass	
1.2-Dichloroethane	%	85			70-130	Pass	
Trichloroethene	%	88			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	78			70-130	Pass	
TRH C6-C10	%	116			70-130	Pass	
TRH >C10-C16	%	80			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	78			70-130	Pass	
Acenaphthylene	%	94			70-130	Pass	
Anthracene	%	91			70-130	Pass	
Benz(a)anthracene	%	121			70-130	Pass	
Benzo(a)pyrene	%	111			70-130	Pass	
Benzo(b&j)fluoranthene	%	125			70-130	Pass	
Benzo(g,h,i)perylene	%	82			70-130	Pass	
Benzo(k)fluoranthene	%	109			70-130	Pass	
Chrysene	%	126			70-130	Pass	
Dibenz(a,h)anthracene	%	72			70-130	Pass	
Fluoranthene	%	112			70-130	Pass	
Fluorene	%	129			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	90			70-130	Pass	
Naphthalene	%	129			70-130	Pass	
Phenanthrene	%	125			70-130	Pass	
Pyrene	%	88			70-130	Pass	
LCS - % Recovery							
Ammonia (as N)	%	98			70-130	Pass	
Nitrate (as N)	%	94			70-130	Pass	
Sulphate (as SO4)	%	120			70-130	Pass	
Total Dissolved Solids Dried at 180°C	%	90			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	100			80-120	Pass	
Cadmium (filtered)	%	100			80-120	Pass	
Chromium (filtered)	%	94			80-120	Pass	
Copper (filtered)	%	100			80-120	Pass	
Lead (filtered)	%	98			80-120	Pass	
Mercury (filtered)	%	99			70-130	Pass	
Nickel (filtered)	%	101			80-120	Pass	
Zinc (filtered)	%	104			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M19-Ap08993	NCP	%	78			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M19-Ap08993	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M19-Ap11686	NCP	%	112			70-130	Pass	
Acenaphthylene	M19-Ap11686	NCP	%	97			70-130	Pass	
Anthracene	M19-Ap11686	NCP	%	75			70-130	Pass	
Benz(a)anthracene	M19-Ap11686	NCP	%	99			70-130	Pass	
Benzo(a)pyrene	M19-Ap11686	NCP	%	90			70-130	Pass	
Benzo(b&j)fluoranthene	M19-Ap11686	NCP	%	90			70-130	Pass	
Benzo(g,h,i)perylene	M19-Ap11686	NCP	%	80			70-130	Pass	
Benzo(k)fluoranthene	M19-Ap11686	NCP	%	97			70-130	Pass	
Chrysene	M19-Ap11686	NCP	%	125			70-130	Pass	
Dibenz(a,h)anthracene	M19-Ap11686	NCP	%	77			70-130	Pass	
Fluoranthene	M19-Ap11686	NCP	%	87			70-130	Pass	
Fluorene	M19-Ap11686	NCP	%	101			70-130	Pass	
Indeno(1,2,3-cd)pyrene	M19-Ap11686	NCP	%	72			70-130	Pass	
Naphthalene	M19-Ap11686	NCP	%	91			70-130	Pass	
Phenanthrene	M19-Ap11686	NCP	%	81			70-130	Pass	
Pyrene	M19-Ap11686	NCP	%	88			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M19-Ap09003	NCP	%	96			70-130	Pass	
Nitrate (as N)	M19-Ap09003	NCP	%	93			70-130	Pass	
Sulphate (as SO4)	M19-Ap08597	NCP	%	128			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	P19-Ap08453	NCP	%	104			70-130	Pass	
Cadmium (filtered)	P19-Ap08453	NCP	%	96			70-130	Pass	
Chromium (filtered)	P19-Ap08453	NCP	%	93			70-130	Pass	
Copper (filtered)	P19-Ap08453	NCP	%	94			70-130	Pass	
Lead (filtered)	P19-Ap08453	NCP	%	95			70-130	Pass	
Mercury (filtered)	P19-Ap08453	NCP	%	110			70-130	Pass	
Nickel (filtered)	P19-Ap08453	NCP	%	95			70-130	Pass	
Zinc (filtered)	P19-Ap08453	NCP	%	98			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M19-Ap09159	NCP	mg/L	6.6	5.1	3.0	30%	Pass	
TRH C15-C28	M19-Ap09159	NCP	mg/L	1.8	0.8	<1	30%	Pass	
TRH C29-C36	M19-Ap09159	NCP	mg/L	0.2	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M19-Ap09159	NCP	mg/L	4.7	3.0	3.0	30%	Pass	
TRH >C16-C34	M19-Ap09159	NCP	mg/L	1.5	0.6	<1	30%	Pass	
TRH >C34-C40	M19-Ap09159	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Acenaphthylene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Anthracene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benz(a)anthracene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(a)pyrene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(b&j)fluoranthene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(g,h,i)perylene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(k)fluoranthene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chrysene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibenz(a,h)anthracene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluoranthene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluorene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Naphthalene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Phenanthrene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Pyrene	M19-Ap11685	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M19-Ap09003	NCP	mg/L	0.08	0.08	6.0	30%	Pass
Nitrate (as N)	M19-Ap09003	NCP	mg/L	0.51	0.51	<1	30%	Pass
pH (at 25°C)	M19-Ap08751	NCP	pH Units	7.7	7.7	pass	30%	Pass
Sulphate (as SO ₄)	M19-Ap12286	NCP	mg/L	73	74	<1	30%	Pass
Total Dissolved Solids Dried at 180°C	M19-Ap08597	NCP	mg/L	1800	1600	11	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	P19-Ap08453	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	P19-Ap08453	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	P19-Ap08453	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	P19-Ap08453	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	P19-Ap08453	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	P19-Ap08453	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	P19-Ap08453	NCP	mg/L	0.009	0.009	2.0	30%	Pass
Zinc (filtered)	P19-Ap08453	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass

Comments

V2: This report has been amended with updated project Id as requested

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Michael Morrison	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)



Glenn Jackson General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EM1904749**
Client : **GOLDER ASSOCIATES**
Contact : **GOLDER CONTACT**
Address : **P O BOX 6079 Building 7, 570-588 Swan St**
RICHMOND VIC, AUSTRALIA 3122
Telephone : **+61 03 8862 3500**
Project : **18113054**
Order number : **Project Number 18113054**
C-O-C number : **827**
Sampler : **DUNCAN FRASER**
Site : **Geelong**
Quote number : **ME-255-19 - COMPASS**
No. of samples received : **6**
No. of samples analysed : **6**

Page : 1 of 9
Laboratory : Environmental Division Melbourne
Contact : Larissa Burns
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +6138549 9644
Date Samples Received : 02-Apr-2019 14:00
Date Analysis Commenced : 02-Apr-2019
Issue Date : 09-Apr-2019 16:54



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
Arenie Vijayaratnam	Non-metals prep supervisor	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



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.



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW04/50010419	MW05/50010419	MW05/55010419	MW06/50010419	MW25/50020419
Client sampling date / time				01-Apr-2019 14:07	01-Apr-2019 15:10	01-Apr-2019 15:42	01-Apr-2019 16:40	02-Apr-2019 08:58
Compound	CAS Number	LOR	Unit	EM1904749-001	EM1904749-002	EM1904749-003	EM1904749-004	EM1904749-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.64	7.51	6.81	6.77	7.06
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	6800	8410	<10	7290	7400
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	525	640	<1	584	741
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.004	0.006	<0.001	0.002	0.002
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.004	0.002	<0.001	0.004	0.001
Copper	7440-50-8	0.001	mg/L	0.016	0.033	<0.001	0.029	0.021
Nickel	7440-02-0	0.001	mg/L	0.006	0.014	<0.001	0.068	0.168
Lead	7439-92-1	0.001	mg/L	0.001	0.002	<0.001	0.002	0.001
Zinc	7440-66-6	0.005	mg/L	0.059	0.111	<0.005	0.076	0.062
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.05	<0.01	0.02	0.06
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.02	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	9.69	11.9	<0.01	7.42	9.23
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	9.71	11.9	<0.01	7.42	9.23
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	<5	<5	<5
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	<5	<5	<5
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	<5	<5	<5
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	<5	<5	<5
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW04/50010419	MW05/50010419	MW05/55010419	MW06/50010419	MW25/50020419
Client sampling date / time				01-Apr-2019 14:07	01-Apr-2019 15:10	01-Apr-2019 15:42	01-Apr-2019 16:40	02-Apr-2019 08:58
Compound	CAS Number	LOR	Unit	EM1904749-001	EM1904749-002	EM1904749-003	EM1904749-004	EM1904749-005
				Result	Result	Result	Result	Result
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	<50	<50
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW04/50010419	MW05/50010419	MW05/55010419	MW06/50010419	MW25/50020419
Client sampling date / time				01-Apr-2019 14:07	01-Apr-2019 15:10	01-Apr-2019 15:42	01-Apr-2019 16:40	02-Apr-2019 08:58
Compound	CAS Number	LOR	Unit	EM1904749-001	EM1904749-002	EM1904749-003	EM1904749-004	EM1904749-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<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	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<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	<1.0



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW04/50010419	MW05/50010419	MW05/55010419	MW06/50010419	MW25/50020419
Client sampling date / time				01-Apr-2019 14:07	01-Apr-2019 15:10	01-Apr-2019 15:42	01-Apr-2019 16:40	02-Apr-2019 08:58
Compound	CAS Number	LOR	Unit	EM1904749-001	EM1904749-002	EM1904749-003	EM1904749-004	EM1904749-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<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	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<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	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<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	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	97.7	106	95.2	96.6	108



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW04/50010419	MW05/50010419	MW05/55010419	MW06/50010419	MW25/50020419
Client sampling date / time				01-Apr-2019 14:07	01-Apr-2019 15:10	01-Apr-2019 15:42	01-Apr-2019 16:40	02-Apr-2019 08:58
Compound	CAS Number	LOR	Unit	EM1904749-001	EM1904749-002	EM1904749-003	EM1904749-004	EM1904749-005
				Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued								
Toluene-D8	2037-26-5	5	%	98.0	96.1	103	100.0	103
4-Bromofluorobenzene	460-00-4	5	%	89.4	90.6	89.5	90.8	95.3
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	33.0	31.8	32.1	32.0	34.7
2-Chlorophenol-D4	93951-73-6	1.0	%	71.5	69.3	73.6	72.8	81.2
2,4,6-Tribromophenol	118-79-6	1.0	%	93.2	85.3	100	102	114
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	90.8	83.7	75.4	89.3	105
Anthracene-d10	1719-06-8	1.0	%	87.8	80.7	84.1	82.7	93.2
4-Terphenyl-d14	1718-51-0	1.0	%	94.1	79.2	110	86.7	103
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	101	111	98.0	101	113
Toluene-D8	2037-26-5	2	%	93.7	92.0	98.7	95.4	98.5
4-Bromofluorobenzene	460-00-4	2	%	89.2	90.6	96.1	92.5	97.6



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	MW25/57020419	----	----	----	----
Client sampling date / time				02-Apr-2019 10:09	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1904749-006	-----	-----	-----	-----
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	%	96.0	----	----	----	----
Toluene-D8	2037-26-5	2	%	94.2	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	92.4	----	----	----	----



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

QUALITY CONTROL REPORT

Work Order	: EM1904749	Page	: 1 of 12
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Melbourne
Contact	: GOLDER CONTACT	Contact	: Larissa Burns
Address	: P O BOX 6079 Building 7, 570-588 Swan St RICHMOND VIC, AUSTRALIA 3122	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 8862 3500	Telephone	: +6138549 9644
Project	: 18113054	Date Samples Received	: 02-Apr-2019
Order number	: Project Number 18113054	Date Analysis Commenced	: 02-Apr-2019
C-O-C number	: 827	Issue Date	: 09-Apr-2019
Sampler	: DUNCAN FRASER		
Site	: Geelong		
Quote number	: ME-255-19 - COMPASS		
No. of samples received	: 6		
No. of samples analysed	: 6		



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Arenie Vijayaratham	Non-metals prep supervisor	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

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

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 2273440)									
EM1904605-027	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.80	5.79	0.172	0% - 20%
EM1904764-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.88	5.96	14.3	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 2274586)									
EM1904685-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1730	1620	6.34	0% - 20%
EM1904752-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1960	1820	6.98	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2273473)									
EM1904764-003	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	807	812	0.609	0% - 20%
EM1904738-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1	<1	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2276117)									
EM1904764-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0008	0.0009	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	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	0.064	0.064	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.010	0.009	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.264	0.266	0.615	0% - 20%
EM1904605-026	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: 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
EG035F: Dissolved Mercury by FIMS (QC Lot: 2276116)									



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 (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 2276116) - continued									
EM1904802-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1904605-026	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 2278607)									
EM1903599-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.04	0.00	No Limit
EM1904614-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.01	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2273475)									
EM1904771-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1904738-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2278608)									
EM1904561-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	0.00	No Limit
EM1904703-009	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	41	40	2.72	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	89	93	4.20	0% - 50%
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	7	7	0.00	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	8	7	0.00	No Limit
EM1904775-003	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
EM1904775-003	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit



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 (%)
EP074C: Sulfonated Compounds (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EM1904775-003	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EP074D: Fumigants (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EM1904775-003	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit



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 (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2275518) - continued									
EM1904666-005	Anonymous	EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EM1904775-003	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit



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 (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 2275518) - continued									
EM1904775-003	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 2275518)									
EM1904666-005	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EM1904775-003	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2273347)									
EM1904775-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2275517)									
EM1904666-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	1370	1300	5.07	0% - 20%
EM1904775-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2273347)									
EM1904775-001	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2275517)									
EM1904666-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	1240	1190	4.44	0% - 20%
EM1904775-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2275517)									
EM1904666-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	296	284	4.41	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	5	5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	44	41	6.81	0% - 20%
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	7	6	0.00	No Limit
		EP080: ortho-Xylene	106-42-3 95-47-6	2	µg/L	<2	<2	0.00	No Limit

Page : 7 of 12
 Work Order : EM1904749
 Client : GOLDER ASSOCIATES
 Project : 18113054



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 (%)
EP080: BTEXN (QC Lot: 2275517) - continued									
EM1904666-005	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	41	42	0.00	No Limit
EM1904775-003	Anonymous	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



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				
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 2274586)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	94	107
				<10	293 mg/L	104	90	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2273473)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	102	86	115
				<1	100 mg/L	90.2	86	115
EG020F: Dissolved Metals by ICP-MS (QCLot: 2276117)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	103	84	104
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.7	83	103
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.3	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	83	105
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.9	82	106
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 2276116)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.1	76	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2278607)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	100	87	117
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2273475)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.5	92	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2278608)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.6	93	120
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2275518)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	105	79	116
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	20 µg/L	100	72	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	20 µg/L	91.4	66	116
EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	20 µg/L	90.1	69	114
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	20 µg/L	101	67	115
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	20 µg/L	94.7	70	113
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	20 µg/L	98.1	70	115
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	20 µg/L	92.4	67	116
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	20 µg/L	96.2	60	116
EP074B: Oxygenated Compounds (QCLot: 2275518)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	200 µg/L	88.0	68	123



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP074B: Oxygenated Compounds (QCLot: 2275518) - continued								
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	200 µg/L	97.4	68	132
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	200 µg/L	105	75	130
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	200 µg/L	110	74	130
EP074C: Sulfonated Compounds (QCLot: 2275518)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	20 µg/L	99.6	55	125
EP074D: Fumigants (QCLot: 2275518)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	20 µg/L	98.0	65	120
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	20 µg/L	98.4	78	116
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	20 µg/L	90.4	76	112
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	20 µg/L	89.6	76	112
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	20 µg/L	105	79	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 2275518)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	200 µg/L	100	50	139
EP074: Chloromethane	74-87-3	50	µg/L	<50	200 µg/L	108	59	135
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	112	53	135
EP074: Bromomethane	74-83-9	50	µg/L	<50	200 µg/L	98.8	52	125
EP074: Chloroethane	75-00-3	50	µg/L	<50	200 µg/L	104	62	128
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	200 µg/L	107	62	125
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	108	63	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	20 µg/L	108	31	126
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	92.6	68	119
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	20 µg/L	106	74	119
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	104	77	118
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	94.0	68	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	20 µg/L	92.9	66	118
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	87.5	62	117
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	106	81	117
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	99.4	67	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	20 µg/L	101	80	116
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	110	84	117
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	20 µg/L	99.5	82	118
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	101	67	120
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	97.4	76	112
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	20 µg/L	110	71	121
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	20 µg/L	88.6	68	116
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	109	81	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	20 µg/L	108	80	123
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	20 µg/L	91.9	70	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
EP074E: Halogenated Aliphatic Compounds (QCLot: 2275518) - continued								
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	20 µg/L	101	74	113
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	103	62	128
EP074F: Halogenated Aromatic Compounds (QCLot: 2275518)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	103	81	116
EP074: Bromobenzene	108-86-1	5	µg/L	<5	20 µg/L	88.4	78	114
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	20 µg/L	85.4	72	115
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	20 µg/L	87.0	71	114
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	20 µg/L	100	74	116
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	96.8	75	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	102	81	113
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	109	64	122
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	20 µg/L	106	73	120
EP074G: Trihalomethanes (QCLot: 2275518)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	105	79	117
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	20 µg/L	87.8	78	113
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	20 µg/L	101	76	112
EP074: Bromoform	75-25-2	5	µg/L	<5	20 µg/L	92.6	73	112
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2273348)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	83.6	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	111	50	117
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	79.9	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	103	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	96.1	59	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	95.2	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.6	61	120
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	99.9	56	120
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	84.8	53	120
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	79.7	57	122
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	106	56	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	101	59	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	103	54	124
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	103	55	124
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	105	54	124
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	90.3	56	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2273347)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4030 µg/L	82.6	50	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	15600 µg/L	102	55	132

Matrix Spike (MS) Report

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: 2273473)							
EM1904749-001	MW04/50010419	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	# Not Determined	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 2276117)							
EM1904605-026	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	94.7	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	100	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	73.5	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	82.3	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.2	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	97.8	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	96.9	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 2276116)							

Page : 12 of 12
 Work Order : EM1904749
 Client : GOLDER ASSOCIATES
 Project : 18113054



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
EG035F: Dissolved Mercury by FIMS (QCLot: 2276116) - continued							
EM1904605-027	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	96.3	70	120
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2278607)							
EM1903599-004	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	98.8	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2273475)							
EM1904746-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	88.8	80	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2278608)							
EM1904561-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	93.3	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 2275518)							
EM1904749-001	MW04/50010419	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	118	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	98.1	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 2275518)							
EM1904749-001	MW04/50010419	EP074: Chlorobenzene	108-90-7	20 µg/L	114	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2275517)							
EM1904749-001	MW04/50010419	EP080: C6 - C9 Fraction	----	280 µg/L	97.2	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2275517)							
EM1904749-001	MW04/50010419	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	90.0	44	122
EP080: BTEXN (QCLot: 2275517)							
EM1904749-001	MW04/50010419	EP080: Benzene	71-43-2	20 µg/L	118	68	130
		EP080: Toluene	108-88-3	20 µg/L	122	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1904749	Page	: 1 of 9
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Melbourne
Contact	: GOLDER CONTACT	Telephone	: +6138549 9644
Project	: 18113054	Date Samples Received	: 02-Apr-2019
Site	: Geelong	Issue Date	: 09-Apr-2019
Sampler	: DUNCAN FRASER	No. of samples received	: 6
Order number	: Project Number 18113054	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

- 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.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO ₄ 2- by DA	EM1904749--001	MW04/50010419	Sulfate as SO ₄ - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
MW04/50010419,	MW05/50010419,	----	----	----	03-Apr-2019	01-Apr-2019	2
MW05/55010419,	MW06/50010419						

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	8	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	1	20	5.00	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	20	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: **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



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
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	03-Apr-2019	01-Apr-2019	✖
Clear Plastic Bottle - Natural (EA005-P) MW25/50020419		02-Apr-2019	----	----	----	02-Apr-2019	02-Apr-2019	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	04-Apr-2019	08-Apr-2019	✔
Clear Plastic Bottle - Natural (EA015H) MW25/50020419		02-Apr-2019	----	----	----	04-Apr-2019	09-Apr-2019	✔
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	03-Apr-2019	29-Apr-2019	✔
Clear Plastic Bottle - Natural (ED041G) MW25/50020419		02-Apr-2019	----	----	----	03-Apr-2019	30-Apr-2019	✔
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	04-Apr-2019	28-Sep-2019	✔
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MW25/50020419		02-Apr-2019	----	----	----	04-Apr-2019	29-Sep-2019	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	04-Apr-2019	29-Apr-2019	✔
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW25/50020419		02-Apr-2019	----	----	----	04-Apr-2019	30-Apr-2019	✔
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	05-Apr-2019	29-Apr-2019	✔
Clear Plastic Bottle - Sulfuric Acid (EK055G) MW25/50020419		02-Apr-2019	----	----	----	05-Apr-2019	30-Apr-2019	✔
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) MW04/50010419, MW05/55010419,	MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	03-Apr-2019	03-Apr-2019	✔
Clear Plastic Bottle - Natural (EK057G) MW25/50020419		02-Apr-2019	----	----	----	03-Apr-2019	04-Apr-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	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	----	----	----	05-Apr-2019	29-Apr-2019	✓	
Clear Plastic Bottle - Sulfuric Acid (EK059G) MW25/50020419	02-Apr-2019	----	----	----	05-Apr-2019	30-Apr-2019	✓	
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-2019	✓	
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-2019	✓	
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-2019	✓	
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-2019	✓	
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-2019	✓	
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW04/50010419, MW05/50010419, MW06/50010419	01-Apr-2019	04-Apr-2019	15-Apr-2019	✓	05-Apr-2019	15-Apr-2019	✓	
Amber VOC Vial - Sulfuric Acid (EP074) MW25/50020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✓	05-Apr-2019	16-Apr-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
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)								
MW04/50010419,	MW05/50010419,	01-Apr-2019	04-Apr-2019	15-Apr-2019	✔	05-Apr-2019	15-Apr-2019	✔
MW05/55010419,	MW06/50010419							
Amber VOC Vial - Sulfuric Acid (EP074)								
MW25/50020419		02-Apr-2019	04-Apr-2019	16-Apr-2019	✔	05-Apr-2019	16-Apr-2019	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
MW04/50010419,	MW05/50010419,	01-Apr-2019	04-Apr-2019	08-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
MW05/55010419,	MW06/50010419							
Amber Glass Bottle - Unpreserved (EP075(SIM))								
MW25/50020419		02-Apr-2019	04-Apr-2019	09-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
MW04/50010419,	MW05/50010419,	01-Apr-2019	04-Apr-2019	08-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
MW05/55010419,	MW06/50010419							
Amber Glass Bottle - Unpreserved (EP071)								
MW25/50020419		02-Apr-2019	04-Apr-2019	09-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080)								
MW04/50010419,	MW05/50010419,	01-Apr-2019	04-Apr-2019	15-Apr-2019	✔	05-Apr-2019	15-Apr-2019	✔
MW05/55010419,	MW06/50010419							
Amber VOC Vial - Sulfuric Acid (EP080)								
MW25/50020419,	MW25/57020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✔	05-Apr-2019	16-Apr-2019	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
MW04/50010419,	MW05/50010419,	01-Apr-2019	04-Apr-2019	08-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
MW05/55010419,	MW06/50010419							
Amber Glass Bottle - Unpreserved (EP071)								
MW25/50020419		02-Apr-2019	04-Apr-2019	09-Apr-2019	✔	05-Apr-2019	14-May-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080)								
MW04/50010419,	MW05/50010419,	01-Apr-2019	04-Apr-2019	15-Apr-2019	✔	05-Apr-2019	15-Apr-2019	✔
MW05/55010419,	MW06/50010419							
Amber VOC Vial - Sulfuric Acid (EP080)								
MW25/50020419,	MW25/57020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✔	05-Apr-2019	16-Apr-2019	✔
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
MW04/50010419,	MW05/50010419,	01-Apr-2019	04-Apr-2019	15-Apr-2019	✔	05-Apr-2019	15-Apr-2019	✔
MW05/55010419,	MW06/50010419							
Amber VOC Vial - Sulfuric Acid (EP080)								
MW25/50020419,	MW25/57020419	02-Apr-2019	04-Apr-2019	16-Apr-2019	✔	05-Apr-2019	16-Apr-2019	✔



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)							
Ammonia as N by Discrete analyser	EK055G	2	16	12.50	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	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	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
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	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	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	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
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	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	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	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
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	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)							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	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	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	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
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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)
Volatile Organic Compounds	EP074	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. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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.

CERTIFICATE OF ANALYSIS

Work Order : **EM1904922**
Client : **GOLDER ASSOCIATES**
Contact : **GOLDER CONTACT**
Address : **P O BOX 6079 Building 7, 570-588 Swan St**
RICHMOND VIC, AUSTRALIA 3122
Telephone : **+61 03 8862 3500**
Project : **18113054**
Order number : **Project Number 18113054**
C-O-C number : **836**
Sampler : **DUNCAN FRASER**
Site : **Geelong**
Quote number : **ME-255-19 - COMPASS**
No. of samples received : **13**
No. of samples analysed : **13**

Page : 1 of 18
Laboratory : Environmental Division Melbourne
Contact : Larissa Burns
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +6138549 9644
Date Samples Received : 04-Apr-2019 10:40
Date Analysis Commenced : 04-Apr-2019
Issue Date : 12-Apr-2019 16:18



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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
Arenie Vijayaratnam	Non-metals prep supervisor	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



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.
- ED041G: Results for EM1904922-010 have been confirmed by re-preparation and re-analysis.
- EG020F: EM1904922 #5, #12 and #13 results for dissolved metal have been confirmed by re-preparation and re-analysis.
- EG035F: EM1904922 #3 Poor matrix spike recovery for dissolved mercury due to sample matrix. Confirmed by re-extraction and re-analysis.



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW22/50020419	MW03/50020419	MW01/50020419	MW01/55020419	MW02/50020419
Client sampling date / time				02-Apr-2019 10:21	04-Apr-2019 09:24	02-Apr-2019 13:06	02-Apr-2019 13:26	02-Apr-2019 15:00
Compound	CAS Number	LOR	Unit	EM1904922-001	EM1904922-002	EM1904922-003	EM1904922-004	EM1904922-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.31	7.47	7.47	7.91	6.71
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	7420	6790	6500	<10	6620
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	816	746	544	<1	459
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.020	0.003	0.001	<0.001	0.018
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.002	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.001	0.018	0.013	<0.001	0.018
Nickel	7440-02-0	0.001	mg/L	0.092	0.060	0.081	<0.001	0.045
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	<0.001	0.001
Zinc	7440-66-6	0.005	mg/L	0.021	0.102	0.039	<0.005	0.098
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.22	0.10	0.04	<0.01	0.04
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.05	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.09	5.15	10.3	<0.01	2.75
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.11	5.20	10.3	<0.01	2.75
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	<5	<5	<5
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	<5	<5	6
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	<5	<5	9
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	<5	<5	63
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW22/50020419	MW03/50020419	MW01/50020419	MW01/55020419	MW02/50020419
Client sampling date / time				02-Apr-2019 10:21	04-Apr-2019 09:24	02-Apr-2019 13:06	02-Apr-2019 13:26	02-Apr-2019 15:00
Compound	CAS Number	LOR	Unit	EM1904922-001	EM1904922-002	EM1904922-003	EM1904922-004	EM1904922-005
				Result	Result	Result	Result	Result
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	<50	<50
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW22/50020419	MW03/50020419	MW01/50020419	MW01/55020419	MW02/50020419
Client sampling date / time				02-Apr-2019 10:21	04-Apr-2019 09:24	02-Apr-2019 13:06	02-Apr-2019 13:26	02-Apr-2019 15:00
Compound	CAS Number	LOR	Unit	EM1904922-001	EM1904922-002	EM1904922-003	EM1904922-004	EM1904922-005
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	20.2
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<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	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<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	<1.0



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW22/50020419	MW03/50020419	MW01/50020419	MW01/55020419	MW02/50020419
Client sampling date / time				02-Apr-2019 10:21	04-Apr-2019 09:24	02-Apr-2019 13:06	02-Apr-2019 13:26	02-Apr-2019 15:00
Compound	CAS Number	LOR	Unit	EM1904922-001	EM1904922-002	EM1904922-003	EM1904922-004	EM1904922-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<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	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<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	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<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	20.2
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	220
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	300
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	300
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	300
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	140
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	210
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	210
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	180
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	3
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	19
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	82
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	56
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	138
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	160
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	25
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	113	110	106	107	106



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW22/50020419	MW03/50020419	MW01/50020419	MW01/55020419	MW02/50020419
Client sampling date / time				02-Apr-2019 10:21	04-Apr-2019 09:24	02-Apr-2019 13:06	02-Apr-2019 13:26	02-Apr-2019 15:00
Compound	CAS Number	LOR	Unit	EM1904922-001	EM1904922-002	EM1904922-003	EM1904922-004	EM1904922-005
				Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued								
Toluene-D8	2037-26-5	5	%	110	106	107	109	101
4-Bromofluorobenzene	460-00-4	5	%	112	102	102	112	96.3
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	26.4	31.0	29.1	25.6	26.8
2-Chlorophenol-D4	93951-73-6	1.0	%	59.6	62.6	57.5	54.3	51.8
2,4,6-Tribromophenol	118-79-6	1.0	%	63.6	86.0	67.9	35.1	90.0
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	65.4	56.2	94.1	64.5	75.9
Anthracene-d10	1719-06-8	1.0	%	64.8	79.4	91.1	67.9	84.1
4-Terphenyl-d14	1718-51-0	1.0	%	60.8	73.8	82.9	77.2	64.6
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	105	110	106	104	106
Toluene-D8	2037-26-5	2	%	98.9	99.6	100	96.2	94.8
4-Bromofluorobenzene	460-00-4	2	%	106	106	102	98.9	94.2



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW10/50030419	MW07/50030419	MW09/50030419	MW08/50030419	MW08/58030419
Client sampling date / time				03-Apr-2019 11:25	03-Apr-2019 12:46	03-Apr-2019 13:58	03-Apr-2019 14:55	03-Apr-2019 14:56
Compound	CAS Number	LOR	Unit	EM1904922-006	EM1904922-007	EM1904922-009	EM1904922-012	EM1904922-013
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.47	7.47	7.59	7.50	7.57
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	8480	6250	5780	6340	6550
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	705	532	236	396	405
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	0.009	0.005	0.005
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.001	0.001	0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.023	0.017	0.010	0.002	0.023
Nickel	7440-02-0	0.001	mg/L	0.015	0.101	0.169	0.104	0.111
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	0.001	<0.001	0.002
Zinc	7440-66-6	0.005	mg/L	0.089	0.029	0.050	0.009	0.046
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.05	0.04	0.02	0.04
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.03	<0.01	0.02	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	6.22	11.2	0.02	2.56	2.82
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	6.27	11.2	0.02	2.58	2.82
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	<5	<5	<5
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	<5	<5	<5
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	<5	<5	<5
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	<5	<5	<5
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW10/50030419	MW07/50030419	MW09/50030419	MW08/50030419	MW08/58030419
Client sampling date / time				03-Apr-2019 11:25	03-Apr-2019 12:46	03-Apr-2019 13:58	03-Apr-2019 14:55	03-Apr-2019 14:56
Compound	CAS Number	LOR	Unit	EM1904922-006	EM1904922-007	EM1904922-009	EM1904922-012	EM1904922-013
				Result	Result	Result	Result	Result
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	<50	<50
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW10/50030419	MW07/50030419	MW09/50030419	MW08/50030419	MW08/58030419
Client sampling date / time				03-Apr-2019 11:25	03-Apr-2019 12:46	03-Apr-2019 13:58	03-Apr-2019 14:55	03-Apr-2019 14:56
Compound	CAS Number	LOR	Unit	EM1904922-006	EM1904922-007	EM1904922-009	EM1904922-012	EM1904922-013
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<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	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<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	<1.0



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW10/50030419	MW07/50030419	MW09/50030419	MW08/50030419	MW08/58030419
Client sampling date / time				03-Apr-2019 11:25	03-Apr-2019 12:46	03-Apr-2019 13:58	03-Apr-2019 14:55	03-Apr-2019 14:56
Compound	CAS Number	LOR	Unit	EM1904922-006	EM1904922-007	EM1904922-009	EM1904922-012	EM1904922-013
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<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	<0.5
Indeno(1,2,3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<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	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<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	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	90	<50	<50	290	230
C15 - C28 Fraction	----	100	µg/L	210	<100	750	340	280
C29 - C36 Fraction	----	50	µg/L	<50	<50	140	50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	300	<50	890	680	510
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	60	50
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	60	50
>C10 - C16 Fraction	----	100	µg/L	100	<100	<100	300	240
>C16 - C34 Fraction	----	100	µg/L	220	<100	850	360	280
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	320	<100	850	660	520
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	100	<100	<100	290	230
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	10	9
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	115	107	111	115	112



Analytical Results

Sub-Matrix: GROUNDWATER
 (Matrix: WATER)

Client sample ID

				MW10/50030419	MW07/50030419	MW09/50030419	MW08/50030419	MW08/58030419
Client sampling date / time				03-Apr-2019 11:25	03-Apr-2019 12:46	03-Apr-2019 13:58	03-Apr-2019 14:55	03-Apr-2019 14:56
Compound	CAS Number	LOR	Unit	EM1904922-006	EM1904922-007	EM1904922-009	EM1904922-012	EM1904922-013
				Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued								
Toluene-D8	2037-26-5	5	%	111	105	109	113	112
4-Bromofluorobenzene	460-00-4	5	%	108	102	109	110	109
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	21.6	20.8	30.0	26.8	25.5
2-Chlorophenol-D4	93951-73-6	1.0	%	52.0	49.8	65.1	57.9	46.6
2,4,6-Tribromophenol	118-79-6	1.0	%	53.9	51.7	86.1	74.5	67.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	48.2	60.2	77.6	75.4	61.6
Anthracene-d10	1719-06-8	1.0	%	59.4	64.3	83.1	73.8	70.8
4-Terphenyl-d14	1718-51-0	1.0	%	55.8	65.1	86.4	91.6	66.2
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	115	106	103	107	104
Toluene-D8	2037-26-5	2	%	104	98.5	97.8	101	100
4-Bromofluorobenzene	460-00-4	2	%	99.7	103	99.6	98.0	98.7



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW10/57030419	MW09/55030419	MW09/57030419	----	----
Client sampling date / time					03-Apr-2019 12:52	03-Apr-2019 14:00	03-Apr-2019 14:26	----	----
Compound	CAS Number	LOR	Unit		EM1904922-008	EM1904922-010	EM1904922-011	-----	-----
				Result	Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		----	4.41	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		----	<10	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		----	3	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		----	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L		----	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		----	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		----	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		----	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		----	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	<0.0001	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		----	<0.01	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		----	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		----	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		----	<0.01	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		----	<5	----	----	----
Isopropylbenzene	98-82-8	5	µg/L		----	<5	----	----	----
n-Propylbenzene	103-65-1	5	µg/L		----	<5	----	----	----
1,3,5-Trimethylbenzene	108-67-8	5	µg/L		----	<5	----	----	----
sec-Butylbenzene	135-98-8	5	µg/L		----	<5	----	----	----
1,2,4-Trimethylbenzene	95-63-6	5	µg/L		----	<5	----	----	----
tert-Butylbenzene	98-06-6	5	µg/L		----	<5	----	----	----
p-Isopropyltoluene	99-87-6	5	µg/L		----	<5	----	----	----
n-Butylbenzene	104-51-8	5	µg/L		----	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW10/57030419	MW09/55030419	MW09/57030419	----	----
Client sampling date / time					03-Apr-2019 12:52	03-Apr-2019 14:00	03-Apr-2019 14:26	----	----
Compound	CAS Number	LOR	Unit		EM1904922-008	EM1904922-010	EM1904922-011	-----	-----
					Result	Result	Result	----	----
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L		----	<50	----	----	----
2-Butanone (MEK)	78-93-3	50	µg/L		----	<50	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L		----	<50	----	----	----
2-Hexanone (MBK)	591-78-6	50	µg/L		----	<50	----	----	----
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L		----	<5	----	----	----
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	5	µg/L		----	<5	----	----	----
1,2-Dichloropropane	78-87-5	5	µg/L		----	<5	----	----	----
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L		----	<5	----	----	----
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L		----	<5	----	----	----
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L		----	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		----	<50	----	----	----
Chloromethane	74-87-3	50	µg/L		----	<50	----	----	----
Vinyl chloride	75-01-4	50	µg/L		----	<50	----	----	----
Bromomethane	74-83-9	50	µg/L		----	<50	----	----	----
Chloroethane	75-00-3	50	µg/L		----	<50	----	----	----
Trichlorofluoromethane	75-69-4	50	µg/L		----	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		----	<5	----	----	----
Iodomethane	74-88-4	5	µg/L		----	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		----	<5	----	----	----
1,1-Dichloroethane	75-34-3	5	µg/L		----	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		----	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		----	<5	----	----	----
1,1-Dichloropropylene	563-58-6	5	µg/L		----	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		----	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		----	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		----	<5	----	----	----
Dibromomethane	74-95-3	5	µg/L		----	<5	----	----	----
1,1,2-Trichloroethane	79-00-5	5	µg/L		----	<5	----	----	----
1,3-Dichloropropane	142-28-9	5	µg/L		----	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		----	<5	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L		----	<5	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				MW10/57030419	MW09/55030419	MW09/57030419	----	----
Client sampling date / time				03-Apr-2019 12:52	03-Apr-2019 14:00	03-Apr-2019 14:26	----	----
Compound	CAS Number	LOR	Unit	EM1904922-008	EM1904922-010	EM1904922-011	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	----	<5	----	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	----	<5	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	----	<5	----	----	----
1,2,3-Trichloropropane	96-18-4	5	µg/L	----	<5	----	----	----
Pentachloroethane	76-01-7	5	µg/L	----	<5	----	----	----
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	----	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	<5	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	<5	----	----	----
Bromobenzene	108-86-1	5	µg/L	----	<5	----	----	----
2-Chlorotoluene	95-49-8	5	µg/L	----	<5	----	----	----
4-Chlorotoluene	106-43-4	5	µg/L	----	<5	----	----	----
1,3-Dichlorobenzene	541-73-1	5	µg/L	----	<5	----	----	----
1,4-Dichlorobenzene	106-46-7	5	µg/L	----	<5	----	----	----
1,2-Dichlorobenzene	95-50-1	5	µg/L	----	<5	----	----	----
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	----	<5	----	----	----
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	----	<5	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	----	<5	----	----	----
Bromodichloromethane	75-27-4	5	µg/L	----	<5	----	----	----
Dibromochloromethane	124-48-1	5	µg/L	----	<5	----	----	----
Bromoform	75-25-2	5	µg/L	----	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	----	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	----	<1.0	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW10/57030419	MW09/55030419	MW09/57030419	----	----
Client sampling date / time					03-Apr-2019 12:52	03-Apr-2019 14:00	03-Apr-2019 14:26	----	----
Compound	CAS Number	LOR	Unit		EM1904922-008	EM1904922-010	EM1904922-011	-----	-----
					Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		----	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		----	<1.0	----	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L		----	<1.0	----	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L		----	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		----	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		----	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		----	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		----	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		----	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		----	102	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW10/57030419	MW09/55030419	MW09/57030419	----	----
Client sampling date / time					03-Apr-2019 12:52	03-Apr-2019 14:00	03-Apr-2019 14:26	----	----
Compound	CAS Number	LOR	Unit		EM1904922-008	EM1904922-010	EM1904922-011	-----	-----
					Result	Result	Result	----	----
EP074S: VOC Surrogates - Continued									
Toluene-D8	2037-26-5	5	%		----	100	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		----	97.9	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	22.0	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	47.4	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	49.3	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	51.0	----	----	----
Anthracene-d10	1719-06-8	1.0	%		----	60.5	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	77.0	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		100.0	102	97.0	----	----
Toluene-D8	2037-26-5	2	%		93.4	94.3	96.7	----	----
4-Bromofluorobenzene	460-00-4	2	%		96.1	97.5	98.0	----	----



Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

QUALITY CONTROL REPORT

Work Order	: EM1904922	Page	: 1 of 13
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Melbourne
Contact	: GOLDER CONTACT	Contact	: Larissa Burns
Address	: P O BOX 6079 Building 7, 570-588 Swan St RICHMOND VIC, AUSTRALIA 3122	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 8862 3500	Telephone	: +6138549 9644
Project	: 18113054	Date Samples Received	: 04-Apr-2019
Order number	: Project Number 18113054	Date Analysis Commenced	: 04-Apr-2019
C-O-C number	: 836	Issue Date	: 12-Apr-2019
Sampler	: DUNCAN FRASER		
Site	: Geelong		
Quote number	: ME-255-19 - COMPASS		
No. of samples received	: 13		
No. of samples analysed	: 13		



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Arenie Vijayaratham	Non-metals prep supervisor	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 2278628)									
EM1904922-002	MW03/50020419	EA005-P: pH Value	----	0.01	pH Unit	7.47	7.45	0.268	0% - 20%
EM1904570-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.81	5.76	0.864	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 2278631)									
EM1904935-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.94	6.61	4.87	0% - 20%
EM1904958-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.30	7.24	0.825	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 2279817)									
EM1904570-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	5750	6210	7.66	0% - 20%
EM1904932-004	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	<10	0.00	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 2281815)									
EM1904888-013	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	194	196	1.02	0% - 50%
EM1904927-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6720	6980	3.66	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 2286114)									
EM1904922-002	MW03/50020419	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6790	6700	1.44	0% - 20%
EM1904972-023	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	406	406	0.00	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2278522)									
EM1904916-005	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	14	14	0.00	0% - 50%
EM1904473-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	174	179	2.81	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2278525)									
EM1904922-013	MW08/58030419	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	405	422	4.26	0% - 20%
EM1904932-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	109	113	3.15	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2279605)									
EM1904473-001	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	0.004	0.004	0.00	No Limit



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 (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2279605) - continued									
EM1904473-001	Anonymous	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	0.006	0.005	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.016	0.015	6.90	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.065	0.063	2.37	0% - 50%
EM1904864-004	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	0.004	0.004	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.014	0.014	0.00	0% - 50%
EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.055	0.052	6.33	0% - 50%		
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2279608)									
EM1904922-002	MW03/50020419	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	0.003	0.003	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	0.018	0.018	0.00	0% - 50%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.060	0.059	2.42	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.102	0.103	0.00	0% - 20%
EM1904922-013	MW08/58030419	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	0.005	0.005	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	0.023	0.023	0.00	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.111	0.109	1.78	0% - 20%
EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.046	0.046	0.00	No Limit		
EG035F: Dissolved Mercury by FIMS (QC Lot: 2279607)									
EM1904473-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1904864-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 2279609)									
EM1904922-002	MW03/50020419	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1904922-013	MW08/58030419	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 2281628)									
EM1904865-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.11	0.10	13.7	0% - 50%
EM1904927-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	37.4	38.8	3.65	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 2281636)									
EM1904922-006	MW10/50030419	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.04	0.00	No Limit
EM1904958-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.02	71.8	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 (%)
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2278521)									
EM1903599-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1904473-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2278524)									
EM1904922-007	MW07/50030419	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.03	0.03	0.00	No Limit
EM1904927-005	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.02	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2281629)									
EM1904865-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	0.00	No Limit
EM1904927-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.02	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2281637)									
EM1904922-006	MW10/50030419	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	6.27	6.09	2.89	0% - 20%
EM1904958-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	4.86	4.61	5.21	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit



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 (%)
EP074C: Sulfonated Compounds (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EP074D: Fumigants (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit



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 (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2281023) - continued									
EM1904922-001	MW22/50020419	EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit



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 (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 2281023) - continued									
EM1904922-013	MW08/58030419	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 2281023)									
EM1904922-001	MW22/50020419	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EM1904922-013	MW08/58030419	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2281022)									
EM1904922-001	MW22/50020419	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1904922-013	MW08/58030419	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2281022)									
EM1904922-001	MW22/50020419	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1904922-013	MW08/58030419	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	50	50	0.00	No Limit
EP080: BTEXN (QC Lot: 2281022)									
EM1904922-001	MW22/50020419	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
EM1904922-013	MW08/58030419	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	9	9	0.00	No Limit		

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.

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
	Spike	Spike Recovery (%)	Recovery Limits (%)	
Result	Concentration	LCS	Low	High
<10	2000 mg/L	99.8	94	107
<10	293 mg/L	101	90	110
<10	2000 mg/L	100	94	107
<10	293 mg/L	104	90	110
<10	2000 mg/L	99.5	94	107
<10	293 mg/L	102	90	110
<1	25 mg/L	105	86	115
<1	100 mg/L	104	86	115
<1	25 mg/L	105	86	115
<1	100 mg/L	104	86	115
<0.001	0.1 mg/L	96.2	91	107
<0.0001	0.1 mg/L	92.9	84	104
<0.001	0.1 mg/L	96.9	83	103
<0.001	0.1 mg/L	91.8	82	103
<0.001	0.1 mg/L	97.0	83	105
<0.001	0.1 mg/L	94.4	82	106
<0.005	0.1 mg/L	105	85	109
<0.001	0.1 mg/L	99.2	91	107
<0.0001	0.1 mg/L	91.9	84	104
<0.001	0.1 mg/L	98.0	83	103
<0.001	0.1 mg/L	91.8	82	103
<0.001	0.1 mg/L	96.3	83	105
<0.001	0.1 mg/L	91.2	82	106
<0.005	0.1 mg/L	99.0	85	109
<0.0001	0.01 mg/L	81.0	76	114

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
EG035F: Dissolved Mercury by FIMS (QCLot: 2279609) - continued								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	85.8	76	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2281628)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	98.6	87	117
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2281636)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	103	87	117
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2278521)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	92	111
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2278524)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	98.7	92	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2281629)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	94.9	93	120
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2281637)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	93	120
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2281023)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	107	79	116
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	20 µg/L	104	72	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	20 µg/L	95.8	66	116
EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	20 µg/L	98.3	69	114
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	20 µg/L	98.2	67	115
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	20 µg/L	98.2	70	113
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	20 µg/L	102	70	115
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	20 µg/L	94.4	67	116
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	20 µg/L	87.4	60	116
EP074B: Oxygenated Compounds (QCLot: 2281023)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	200 µg/L	101	68	123
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	200 µg/L	86.4	68	132
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	200 µg/L	100	75	130
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	200 µg/L	98.5	74	130
EP074C: Sulfonated Compounds (QCLot: 2281023)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	20 µg/L	90.1	55	125
EP074D: Fumigants (QCLot: 2281023)								
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	20 µg/L	104	65	120
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	20 µg/L	104	78	116
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	20 µg/L	102	76	112
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	20 µg/L	99.8	76	112
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	20 µg/L	109	79	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 2281023)								

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

CAS Number

LOR

Unit

Result

Concentration

LCS

Low

High

EP074E: Halogenated Aliphatic Compounds (QCLot: 2281023) - continued

EP074F: Halogenated Aromatic Compounds (QCLot: 2281023)

EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	105	81	116
EP074: Bromobenzene	108-86-1	5	µg/L	<5	20 µg/L	102	78	114
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	20 µg/L	102	72	115
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	20 µg/L	93.7	71	114
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	20 µg/L	96.5	74	116
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	100	75	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	102	81	113
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	91.8	64	122
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	20 µg/L	99.8	73	120

EP074G: Trihalomethanes (QCLot: 2281023)



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				
EP074G: Trihalomethanes (QCLot: 2281023) - continued								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	107	79	117
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	20 µg/L	105	78	113
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	20 µg/L	108	76	112
EP074: Bromoform	75-25-2	5	µg/L	<5	20 µg/L	101	73	112
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2277257)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	70.6	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	90.2	50	117
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	80.1	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	82.6	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	80.9	59	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	73.7	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	90.1	61	120
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	69.7	56	120
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	62.6	53	120
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	63.2	57	122
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	73.0	56	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	92.8	59	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	95.9	54	124
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	88.2	55	124
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	88.4	54	124
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	104	56	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2277255)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4030 µg/L	80.9	50	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	15600 µg/L	87.8	55	132
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7820 µg/L	85.3	55	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2281022)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	85.4	65	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2277255)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5960 µg/L	80.9	53	129
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	20700 µg/L	86.0	56	131
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1520 µg/L	79.5	53	136
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2281022)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	84.2	64	124
EP080: BTEXN (QCLot: 2281022)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	95.7	69	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	93.0	73	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	92.6	71	125

Matrix Spike (MS) Report

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: 2278522)							
EM1904473-021	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	92.0	70	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2278525)							
EM1904927-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	72.0	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 2279605)							
EM1904473-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	99.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	95.3	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	97.8	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	91.4	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	93.4	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	95.4	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	97.0	75	131
EG020F: Dissolved Metals by ICP-MS (QCLot: 2279608)							
EM1904922-002	MW03/50020419	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	104	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	95.6	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	94.8	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	91.0	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.0	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	91.7	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	92.0	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 2279607)							
EM1904473-021	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	70.7	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 2279609)							
EM1904922-003	MW01/50020419	EG035F: Mercury	7439-97-6	0.01 mg/L	# 28.1	70	120
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2281628)							



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
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2281628) - continued							
EM1904865-004	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	97.6	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2281636)							
EM1904922-007	MW07/50030419	EK055G: Ammonia as N	7664-41-7	1 mg/L	80.2	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2278521)							
EM1903599-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	95.9	80	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2278524)							
EM1904922-009	MW09/50030419	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	97.0	80	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2281629)							
EM1904865-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	84.2	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2281637)							
EM1904922-007	MW07/50030419	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 2281023)							
EM1904922-002	MW03/50020419	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	109	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	99.2	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 2281023)							
EM1904922-002	MW03/50020419	EP074: Chlorobenzene	108-90-7	20 µg/L	111	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2281022)							
EM1904922-002	MW03/50020419	EP080: C6 - C9 Fraction	----	280 µg/L	81.5	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2281022)							
EM1904922-002	MW03/50020419	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	79.2	44	122
EP080: BTEXN (QCLot: 2281022)							
EM1904922-002	MW03/50020419	EP080: Benzene	71-43-2	20 µg/L	109	68	130
		EP080: Toluene	108-88-3	20 µg/L	105	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1904922	Page	: 1 of 12
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Melbourne
Contact	: GOLDER CONTACT	Telephone	: +6138549 9644
Project	: 18113054	Date Samples Received	: 04-Apr-2019
Site	: Geelong	Issue Date	: 12-Apr-2019
Sampler	: DUNCAN FRASER	No. of samples received	: 13
Order number	: Project Number 18113054	No. of samples analysed	: 13

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	EM1904922--003	MW01/50020419	Mercury	7439-97-6	28.1 %	70-120%	Recovery less than lower data quality objective
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EM1904922--007	MW07/50030419	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
MW22/50020419,	MW01/50020419,	----	----	----	05-Apr-2019	02-Apr-2019	3
MW01/55020419,	MW02/50020419						
Clear Plastic Bottle - Natural							
MW10/50030419,	MW07/50030419,	----	----	----	05-Apr-2019	03-Apr-2019	2
MW09/50030419,	MW09/55030419,						
MW08/50030419,	MW08/58030419						
Clear Plastic Bottle - Natural							
MW03/50020419		----	----	----	05-Apr-2019	04-Apr-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	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	13	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	16	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: **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	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	05-Apr-2019	02-Apr-2019	✖
Clear Plastic Bottle - Natural (EA005-P) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	05-Apr-2019	03-Apr-2019	✖
Clear Plastic Bottle - Natural (EA005-P) MW03/50020419		04-Apr-2019	----	----	----	05-Apr-2019	04-Apr-2019	✖
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	08-Apr-2019	09-Apr-2019	✔
Clear Plastic Bottle - Natural (EA015H) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	09-Apr-2019	10-Apr-2019	✔
Clear Plastic Bottle - Natural (EA015H) MW03/50020419		04-Apr-2019	----	----	----	10-Apr-2019	11-Apr-2019	✔
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	05-Apr-2019	30-Apr-2019	✔
Clear Plastic Bottle - Natural (ED041G) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	05-Apr-2019	01-May-2019	✔
Clear Plastic Bottle - Natural (ED041G) MW03/50020419		04-Apr-2019	----	----	----	05-Apr-2019	02-May-2019	✔
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	05-Apr-2019	29-Sep-2019	✔
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	05-Apr-2019	30-Sep-2019	✔
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MW03/50020419		04-Apr-2019	----	----	----	05-Apr-2019	01-Oct-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
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	08-Apr-2019	30-Apr-2019	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	08-Apr-2019	01-May-2019	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW03/50020419		04-Apr-2019	----	----	----	08-Apr-2019	02-May-2019	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	09-Apr-2019	30-Apr-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	09-Apr-2019	01-May-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK055G) MW03/50020419		04-Apr-2019	----	----	----	09-Apr-2019	02-May-2019	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	04-Apr-2019	04-Apr-2019	✓
Clear Plastic Bottle - Natural (EK057G) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	05-Apr-2019	05-Apr-2019	✓
Clear Plastic Bottle - Natural (EK057G) MW03/50020419		04-Apr-2019	----	----	----	05-Apr-2019	06-Apr-2019	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	----	----	----	08-Apr-2019	30-Apr-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	----	----	----	08-Apr-2019	01-May-2019	✓
Clear Plastic Bottle - Sulfuric Acid (EK059G) MW03/50020419		04-Apr-2019	----	----	----	08-Apr-2019	02-May-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
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP074B: Oxygenated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP074C: Sulfonated Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP074D: Fumigants								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-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
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP074) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	09-Apr-2019	✔	09-Apr-2019	18-May-2019	✔
Amber Glass Bottle - Unpreserved (EP075(SIM)) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	10-Apr-2019	✔	09-Apr-2019	18-May-2019	✔
Amber Glass Bottle - Unpreserved (EP075(SIM)) MW03/50020419		04-Apr-2019	08-Apr-2019	11-Apr-2019	✔	09-Apr-2019	18-May-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 Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	09-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	10-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW03/50020419		04-Apr-2019	08-Apr-2019	11-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✓	09-Apr-2019	16-Apr-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW10/50030419, MW10/57030419, MW09/55030419, MW08/50030419,	MW07/50030419, MW09/50030419, MW09/57030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✓	09-Apr-2019	17-Apr-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✓	09-Apr-2019	18-Apr-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	09-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW10/50030419, MW09/50030419, MW08/50030419,	MW07/50030419, MW09/55030419, MW08/58030419	03-Apr-2019	08-Apr-2019	10-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW03/50020419		04-Apr-2019	08-Apr-2019	11-Apr-2019	✓	09-Apr-2019	18-May-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✓	09-Apr-2019	16-Apr-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW10/50030419, MW10/57030419, MW09/55030419, MW08/50030419,	MW07/50030419, MW09/50030419, MW09/57030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✓	09-Apr-2019	17-Apr-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✓	09-Apr-2019	18-Apr-2019	✓

Page : 8 of 12
 Work Order : EM1904922
 Client : GOLDER ASSOCIATES
 Project : 18113054



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: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) MW22/50020419, MW01/55020419,	MW01/50020419, MW02/50020419	02-Apr-2019	08-Apr-2019	16-Apr-2019	✔	09-Apr-2019	16-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) MW10/50030419, MW10/57030419, MW09/55030419, MW08/50030419,	MW07/50030419, MW09/50030419, MW09/57030419, MW08/58030419	03-Apr-2019	08-Apr-2019	17-Apr-2019	✔	09-Apr-2019	17-Apr-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) MW03/50020419		04-Apr-2019	08-Apr-2019	18-Apr-2019	✔	09-Apr-2019	18-Apr-2019	✔



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)							
Ammonia as N by Discrete analyser	EK055G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	13	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	16	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	6	59	10.17	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	59	5.08	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	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)							
Ammonia as N by Discrete analyser	EK055G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	13	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	16	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. 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)
Volatile Organic Compounds	EP074	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. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
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.

APPENDIX C

Toxfree Waste Transfer Documentation

Tox Free Australia Pty Ltd

ABN 31127853561

Site: TES Laverton

83 Dohertys Road

LAVERTON NORTH, VIC 3026

AUSTRALIA

PO Box 240

ALTONA NORTH, VIC 3025

Phone No.: 03 9369 4222

Fax No.: 03 9369 4380

E-Mail: TESE.Accounts@toxfree.com.au

Website: www.toxfree.com.au



CUSTOMER COPY

Job Sheet

Sales Order No.: S000686868

Document Date: 29/03/19

Customer No.: C000641

Customer PO No.:

ANZSIC Code: 2922

GOLDER ASSOCIATES

570-588 Swan St

RICHMOND, VIC 3121

AUSTRALIA

Contact: Duncan Fraser

Phone No.: 0424 334 158

E-Mail: DuFraser@golder.com.au

Salesperson: Jay Chrisostom

Phone No.: 0409 809 002

E-Mail: j.chrisostom@toxfree.com.au

Task Date: 3/04/2019

Description	Proper Shipping Name	Waste Material Code	UN-Nr	Class or Division	Subsidiary Risk	Packing Group	Quantity	Unit of Measure	NEPM Code/ CW Category	Quantity Collected	WTC/CWT F No.	Driver/Operator Comments
TS099719												
Vacant Site - next to Sphinx Hotel												
8-14 Thompson Road												
NORTH GEELONG, VIC 3215												
Receive: Drilling Mud	NON DANGEROUS GOOD LIQUID	0066-092					2	205L Drum	T130	4x 205		
Receive: Groundwater Contaminated	WASH WATERS	0099-001					2	205L Drum	J120	1x 205		
Transport (Hourly)							1	Hour				
Waste Tracking Fee							1	Each				
Environmental Management Fee 4.45%							0.0445	Each				

This area is for additional items not manifested:

Customer Name:.....

Customer Signature:.....

Date:.....

Operations:.....

Created By:.....

Driver:.....

Time In:.....

Time Out:.....

ENVIRONMENT PROTECTION AUTHORITY VICTORIA

WASTE TRANSPORT CERTIFICATE

1583104

PART A

To be completed by the Waste Producer or the Accredited Agent

1. Name of Waste Producer or Accredited Agent ☒ Waste Producer ☐ Accredited Agent
GOLDER ASSOCIATES
Address of Site of Waste Source
8-14 THOMPSON RD
NORTH-GEE LONG VIC Postcode 3215
Name of Emergency Contact
DUNCAN FRASER Phone 0424334158

2. Proposed Disposal/Treatment/Storage Facility TOX FREE State VIC

3. Intended Treatment Option Recycling ☐ Landfill ☐ Energy Recovery ☐ Chem/Phys Treatment ☐
Storage ☒ Incineration ☐ Immobilisation ☐ Biodegradation ☐ Other ☐

4. Description of Waste
Drilling mud

5. Waste Form 3 Waste Code T130 Hazard Category ☐ Contaminants ☐ Waste Origin 2922
UN Number 3044 Class N.H. Packing Group III Bulk/No. of Packages 4
Amount of Waste kilograms or cubic metres or litres
I declare that to the best of my knowledge and belief the above information is true and correct.
Name and Position DUNCAN FRASER ENGINEER
Signature [Signature] Date 03/04/19



EPA
VICTORIA

GPO BOX 4395
MELBOURNE 3001

1300 372 842
1300 EPA VIC

epa.vic.gov.au

PLEASE USE BLOCK LETTERS

PART B

To be completed by the Waste Transporter

6. Name of Transporter TOX FREE
Address 83 DOHERTY'S RD LAVERTON Nth
Vehicle No. 1 Registration 1DLCNG Transport Permit No. 111196 Vehicle No. 2 Registration Transport Permit No.
I acknowledge receipt of the waste described in part A.
Name (in block letters) [Signature]
Signature [Signature] Date 03/04/19

PART C

To be completed by the Waste Receiver

7. Name of Disposal/Treatment/Storage Facility Licence No.
Address Type of Treatment

8. Amount of Waste kilograms or cubic metres or litres

9. Are there any discrepancies between the wastes described above and the waste received?
YES ☐ NO ☒ Briefly note discrepancy:

10. Name and address of any other waste receiver to which the person completing part C intends that the waste be transported

11. I hereby acknowledge acceptance of the waste described in part A.
Name
Signature Date

COPY 1 - TO BE FORWARDED TO EPA WITHIN SEVEN (7) DAYS WITH PART A & B
COMPLETE BY THE PERSON/COMPANY WHO COMPLETED PART A

EPA-F012

COPY 1

ENVIRONMENT PROTECTION AUTHORITY VICTORIA

WASTE TRANSPORT CERTIFICATE

1583105

PART A

To be completed by the Waste Producer
or the Accredited Agent

1. Name of Waste Producer or Accredited Agent

GOLDER ASSOCIATES

☐ Waste Producer
☐ Accredited Agent

Address of Site of Waste Source

8-14 THOMPSON ST. ROAD

GEEZANG NORTH

VIC

Postcode

3215

Name of Emergency Contact

DUNCAN FRASER

Phone

04 24374158

EPA
VICTORIAGPO BOX 4395
MELBOURNE 30011300 372 842
1300 EPA VIC

epa.vic.gov.au

2. Proposed Disposal/Treatment/Storage Facility

TOX FREE

State

VIC

3. Intended Treatment Option

Recycling ☐
Storage ☐Landfill ☐
Incineration ☐Energy Recovery ☐
Immobilisation ☐Chem/Phys Treatment ☐
Biodegradation ☐Other ☐

4. Description of Waste

CONTAMINATED GROUND WATER

5. Waste Form

L

Waste Code

5120

Hazard Category

☐

Contaminants

☐☐☐☐

Waste Origin

2922

UN Number

30XY

Class

K.H

Packing Group

ID

Bulk/No. of Packages

1

Amount of Waste

kilograms

or

cubic metres

or

litres

I declare that to the best of my knowledge and belief the above information is true and correct.

Name and Position

DUNCAN FRASER ENGINEER

Signature

Date

03/04/18

PART B

To be completed by the
Waste Transporter

6. Name of Transporter

TOX FREE

Address

53 DOHERTY'S RD LAVERTON NH

Vehicle No. 1 Registration

Transport Permit No.

Vehicle No. 2 Registration

Transport Permit No.

1016NG

111196

I acknowledge receipt of the waste described in part A.

Name (in block letters)

Amir

Signature

Date

03/04/18

PART C

To be completed by the Waste Receiver

7. Name of Disposal/Treatment/Storage Facility

Licence No.

Address

Type of Treatment

8. Amount of Waste

kilograms

or

cubic metres

or

litres

9. Are there any discrepancies between the wastes described above and the waste received?

YES ☐NO ☐

Briefly note discrepancy:

10. Name and address of any other waste receiver to which the person completing part C intends that the waste be transported

11. I hereby acknowledge acceptance of the waste described in part A.

Name

Signature

Date

EPA-F012

PLEASE USE BLOCK LETTERS

COPY 1 - TO BE FORWARDED TO EPA WITHIN SEVEN (7) DAYS WITH PART A & B
COMPLETE BY THE PERSON/COMPANY WHO COMPLETED PART A

COPY 1

APPENDIX D

Groundwater Field Sheets

GROUNDWATER SAMPLING RECORD FORM

PROJECT INFORMATION

Project Number: 18113054

Client: Leaf Corporation

Site Location: 8 - 14 Thompson Street, North Geelong

Date: 02/04/19

Sampled By: DAF

GROUNDWATER WELL DATA

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.1
Time	12:32
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	4.876
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	7.02
Bailed Thickness (m)	-

Information from file

Surveyed reference point	TOC
Depth of well (from log)	7.02
Depth of pump intake (mbRP)	6
Length of hose (m)	7.5
Volume in hose (L)	0.525

Note: Standard reference point is top of PVC standpipe
mbRP - metres below top of reference point
Hose volume - 0.1 L/m of 12mm internal diameter hose
Hose volume - 0.05 L/m of 8mm internal diameter hose
Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Gatic Condition: Good

EQUIPMENT RECORD

Purging & Sampling Method: Low Flow Low Flow

WQM Model / Serial No: YSI Pro - 18L101813

Calibrated by: DAF

Calibration Certificate: 20190402_DAF

PURGING RECORD

Depth to water after placement of pump (mbRP)

4.845

Time		Volume Purged (L) (not cumulative)	Conductivity (uS/cm)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Depth to Water (mbRP)	Drawdown (m)	Appearance turbidity, odour, etc)	Pump Adjustments		
											CPM	Discharge Time	Refill Time
		Stabilisation Range	± 5%	± 0.5 °C	± 0.1	± 10 mV	± 10%						
12:31											2	20	10
12:36		1	10618	21.5	6.92	11.6	0.62	4.908	0.063	Yellow/brown, Medium turbidity, no odour	3	11	9
12:41		1.5	10488	21.3	6.87	160.9	0.83	4.934	0.089	Yellow/brown, Medium turbidity, no odour	4	10	5
12:45		1.6	10479	21.1	6.88	152.5	1.15	4.972	0.127	Yellow/brown (becoming paler), Medium turbidity no odour	4	10	5
12:50		2	10508	21.1	6.88	142.2	1.57	4.971	0.126	Pale grey, medium turbidity, no odour	4	10	5
12:55		2	10557	21.0	6.90	135.6	1.86	4.981	0.136	Pale grey, low to medium turbidity, no odour	4	10	5
13:00		2	10603	21.0	6.89	133.2	2.04	4.983	0.138	Almost clear, low to medium turbidity, no odour.	4	10	5
13:05		2	10667	21.1	6.91	126.5	1.97	4.991	0.146				

Enter last 3 readings in blue boxes as check

10508.00	21.10	6.88	135.60	1.86
10557.00	21.00	6.90	133.20	2.04
10603.00	21.00	6.89	126.50	1.97
0.5	0.1	0.02	9	4.6

Calculated Stabilisation Range

Drawdown (m) 0.146

Total vol. purged (L)

Purged volume (from well not
aquifer) (L)

Flow Rate (L/min)

12.1

0.292

0.4

ensure that total volume purged (above) is significantly above this figure to obtain formation water

SAMPLING RECORD

Time sampled: 13:07

Colour: Clear

Odour: No

Turbidity: Low

Sample ID: MW01/50020419

Duplicate sample taken?: No

Dup ID: No

Hydrocarbon sheen/LNAPL?: No

Rinsate: Yes

Sample ID: MW01/55020419

VOC (Lab Ref): 25-Mar

SVOC (Lab Ref): 25-Mar

Metal and Inorgs (Lab Ref) MGT - Batch MO444 exp. 26/C

Sample Container and Preservation: (F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)

2 Vials (P)

1 0.1L Amber

1 Metals (F/UF)

- UT Metals (F/UF)

1 0.25L Green Plastic

1 0.06L Purple Plastic

- COD/NH3/Phenols (F/UNF) (P/UP)

- Ferrous Iron

- Other

OBSERVATIONS

Notes:

Weather Conditions: Temperature: 24 degrees, clear, sunny

Precipitation: No

GROUNDWATER SAMPLING RECORD FORM

PROJECT INFORMATION

Project Number: 18113054

Client: Leaf Corporation

Site Location: 8 - 14 Thompson Street, North Geelong

Date: 02/04/19

Sampled By: DAF

GROUNDWATER WELL DATA

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.1
Time	14:00
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	4.649
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	7.02
Bailed Thickness (m)	-

Information from file

Surveyed reference point	TOC
Depth of well (from log)	7.015
Depth of pump intake (mbRP)	5.8
Length of hose (m)	7.5
Volume in hose (L)	0.525

Note: Standard reference point is top of PVC standpipe
mbRP - metres below top of reference point
Hose volume - 0.1 L/m of 12mm internal diameter hose
Hose volume - 0.05 L/m of 8mm internal diameter hose
Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Gatic Condition: Good

EQUIPMENT RECORD

Purging & Sampling Method: Low Flow Low Flow

WQM Model / Serial No: YSI Pro - 18L101813

Calibrated by: DAF

Calibration Certificate: 20190402_DAF

PURGING RECORD

Depth to water after placement of pump (mbRP)

4.577

Time		Volume Purged (L) (not cumulative)	Conductivity (uS/cm)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Depth to Water (mbRP)	Drawdown (m)	Appearance turbidity, odour, etc)	Pump Adjustments		
											CPM	Discharge Time	Refill Time
		Stabilisation Range	± 5%	± 0.5 °C	± 0.1	± 10 mV	± 10%						
14:18											2	20	10
14:23		1	11328	2.3	6.73	-91.9	0.10	4.740	0.163	Pale grey, low to medium turbidity, mild hydrocarbon odour	2	20	10
14:28		1	11174	22.2	6.44	-114.3	2.33	4.881	0.304	As Above	1	40	20
14:33		0.5	11368	23.1	6.30	-103.3	3.67	4.845	0.268	As Above	1	40	20
14:41		0.8	11438	23.1	6.29	-78.4	4.01	4.828	0.251	As Above	1	40	20
14:47		0.6	11461	23.1	6.23	-60.8	4.19	4.815	0.238	Clear, low turbidity, no hydrocarbon odour.	1	40	20
14:52		0.5	11442	23.0	6.19	-43.2	4.39	4.835	0.258	Clear, low turbidity, no hydrocarbon odour.	1	40	20
14:57		0.5	11430	22.9	6.17	-34.1	4.35	4.821	0.244	Clear, low turbidity, no hydrocarbon odour.	1	40	20
15:02		0.5	11422	22.9	6.17	-25.6	4.39	4.833	0.256	Clear, low turbidity, no hydrocarbon odour.	1	40	20
15:07		0.5	11443	23.0	6.16	-18	4.38	4.830	0.253	Clear, low turbidity, no hydrocarbon odour.	1	40	20
15:12		0.5	11448	23.0	6.16	-16.9	4.39	4.829	0.252	Clear, low turbidity, no hydrocarbon odour.			

Enter last 3 readings in blue boxes as check

11430	22.90	6.17	-25.60	4.39
11422	22.90	6.17	-18.00	4.38
11443	23.00	6.16	-16.90	4.39
0.1	0.1	0.01	9	0.1

Calculated Stabilisation Range

Drawdown (m) 0.304

Total vol. purged (L)

Purged volume (from well not aquifer) (L)

Flow Rate (L/min)

6.4

0.608

0.1

ensure that total volume purged (above) is significantly above this figure to obtain formation water

SAMPLING RECORD

Time sampled: 15:15

Colour: Clear

Odour: No

Turbidity: Low

Sample ID: MW02/50020419

Duplicate sample taken?: No

Dup ID: No

Hydrocarbon sheen/LNAPL?: No

Trip Blank

Sample ID

Dated

MW10/57030419

Sample Container and Preservation: (F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)

3

Vials (P)

-

UT Metals (F/UF)

1

0.1L Amber

1

0.25L Green Plastic

1

Metals (F/UF)

1

0.06L Purple Plastic

-

COD/NH3/Phenols (F/UNF) (P/UP)

-

Ferrous Iron

-

Other

OBSERVATIONS

Notes:

Weather Conditions:

Temperature: 24 degrees, clear, sunny, Southerly breeze

Precipitation: No

GROUNDWATER SAMPLING RECORD FORM

PROJECT INFORMATION

Project Number: 18113054

Client: Leaf Corporation

Site Location: 8 - 14 Thompson Street, North Geelong

Date: 02/04/19

Sampled By: DAF

GROUNDWATER WELL DATA

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.1
Time	11:20
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	4.726
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	7.00
Bailed Thickness (m)	-

Information from file

Surveyed reference point	TOC
Depth of well (from log)	7
Depth of pump intake (mbRP)	5.8
Length of hose (m)	8
Volume in hose (L)	0.56

Note: Standard reference point is top of PVC standpipe
mbRP - metres below top of reference point
Hose volume - 0.1 L/m of 12mm internal diameter hose
Hose volume - 0.05 L/m of 8mm internal diameter hose
Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Gatic Condition: Good

EQUIPMENT RECORD

Purging & Sampling Method: Low Flow Low Flow

WQM Model / Serial No: YSI Pro - 18L101813

Calibrated by: DAF

Calibration Certificate: 20190402_DAF

PURGING RECORD

Depth to water after placement of pump (mbRP)				4.652									
Time		Volume Purged (L) (not cumulative)	Conductivity (uS/cm)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Depth to Water (mbRP)	Drawdown (m)	Appearance turbidity, odour, etc)	Pump Adjustments		
											CPM	Discharge Time	Refill Time
		Stabilisation Range	± 5%	± 0.5 °C	± 0.1	± 10 mV	± 10%						
11:25											2	20	10
11:32		1.4	12228	21.3	6.86	142.2	0.16	4.882	0.230	Clear, low turbidity, no odour	2	20	10
11:35		0.6	11034	21.4	6.84	133.5	0.80	4.952	0.300	Clear, low turbidity, no odour	1	40	20
11:43		0.8	11052	21.5	6.84	121.4	1.59	5.041	0.389	Clear, low turbidity, no odour	1	40	20
11:50		0.7	11122	21.8	6.85	113.1	1.80	5.090	0.438	Clear, low turbidity, no odour	1	40	20
11:57		0.7	11169	21.9	6.82	108	2.03	5.140	0.488	Clear, low turbidity, no odour	1	40	20
12:00		0.3	11185	21.9	6.85	104.1	2.01	5.151	0.499	Clear, low turbidity, no odour	1	40	20
12:05		0.5	11179	21.8	6.86	101.7	1.94	5.170	0.518	Clear, low turbidity, no odour	1	40	20
Enter last 3 readings in blue boxes as check			11122.00	21.80	6.85	108.00	2.03						
			11169.00	21.90	6.82	104.10	2.01						
			11185.00	21.90	6.85	101.70	1.94						
Calculated Stabilisation Range			0.3	0.1	0.03	6	2.3	Drawdown (m)	0.518				

Total vol. purged (L) 5

Purged volume (from well not aquifer) (L) 1.036

Flow Rate (L/min) 0.06

ensure that total volume purged (above) is significantly above this figure to obtain formation water

SAMPLING RECORD

Time sampled: 12:05

Colour: Clear

Odour: No

Turbidity: Low

Sample Container and Preservation: (F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)

2 Vials (P) - UT Metals (F/UF)

1 0.1L Amber 1 0.25L Green Plastic

1 Metals (F/UF) 1 0.06L Purple Plastic

Sample ID: MW03/50020419

Duplicate sample taken?: No

Dup ID: No

Hydrocarbon sheen/LNAPL?: No

Rinsate

COD/NH3/Phenols (F/UNF) (P/UP) -

Ferrous Iron -

Other -

OBSERVATIONS

Weather Conditions: Temperature: 22 degrees, clear, sunny

Precipitation: No

Notes: Could not fully stallise drawdown. Sampled after 5L purged.

GROUNDWATER SAMPLING RECORD FORM

WELL ID	MW04

PROJECT INFORMATION

Project Number: 18113054
 Client: Leaf Corporation
 Site Location: 8 - 14 Thompson Street, North Geelong

Date: 01/04/19
 Sampled By: DAF

GROUNDWATER WELL DATA

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.1
Time	6:00
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	7.263
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	8.52
Bailed Thickness (m)	-

Information from file

Surveyed reference point	TOC
Depth of well (from log)	8.5
Depth of pump intake (mbRP)	7.8
Length of hose (m)	9
Volume in hose (L)	0.63

Note: Standard reference point is top of PVC standpipe
 mbRP - metres below top of reference point
 Hose volume - 0.1 L/m of 12mm internal diameter hose
 Hose volume - 0.05 L/m of 8mm internal diameter hose
 Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Gatic Condition: Good

EQUIPMENT RECORD

Purging & Sampling Method: Low Flow Low flow
 WQM Model / Serial No: YSI Pro - 18L101813

Calibrated by: Aimet

Calibration Certificate: 28/03/2019

PURGING RECORD

Depth to water after placement of pump (mbRP)

7.252

Time		Volume Purged (L) (not cumulative)	Conductivity (uS/cm)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Depth to Water (mbRP)	Drawdown (m)	Appearance (colour, turbidity, odour, etc)	Pump Adjustments		
											CPM	Discharge Time	Refill Time
		Stabilisation Range	± 5%	± 0.5 °C	± 0.1	± 10 mV	± 10%		-7.252		2	20	10
13:32													
13:37		1	1718	19.4	7.69	163.3	5.65	7.151	-0.101	Yellow/Grey, Medium Turbidity, no odour	3	11	9
13:42		1.5	3245	19.1	7.54	158	5.06	7.316	0.064	Yellow/Grey, Medium Turbidity, no odour	4	10	5
13:47		2	5776	18.9	7.44	155.9	4.82	7.342	0.090	Pale grey, low -> Medium turbidity, no odour	4	10	5
13:52		2	7741	18.9	7.36	151.9	4.16	7.340	0.088	Pale grey, low -> Medium turbidity, no odour	4	10	5
13:57		2	8657	18.9	7.32	149.4	3.92	7.346	0.094	Almost clear, low -> medium turbidity, no odd	4	10	5
14:03		2.4	9126	18.9	7.29	148	3.65	7.340	0.088	Clear, low turbidity, no odour	4	10	5
14:08		2	9561	18.9	7.27	146.8	3.57	7.351	0.099	Clear, low turbidity, no odour	4	10	5
14:13		2	9848	18.8	7.26	145.5	3.54	7.347	0.095				

Enter last 3 readings in blue boxes as check

Calculated Stabilisation Range

8657	18.90	7.32	149.40	3.92
9126	18.90	7.29	148.00	3.65
9561	18.90	7.27	146.80	3.57
5.0	0.0	0.05	3	4.7

Drawdown (m) 0.099

Total vol. purged (L) 14.9
 Purged volume (from well not aquifer) (L) 0.198
 Flow Rate (L/min) 0.4

ensure that total volume purged (above) is significantly above this figure to obtain formation water

SAMPLING RECORD

Time sampled: 14:15
 Colour: Clear
 Odour: No
 Turbidity: Low

Sample ID: MW04/50010419
 Duplicate sample taken? No
 Dup ID: -
 Hydrocarbon sheen/LNAPL? No

Sample Container and Preservation: (F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)

2	Vials (P)	-	UT Metals (F/UF)	-	COD/NH3/Phenols (F/UNF) (P/UP)
1	0.1L Amber	1	0.25L Green Plastic	-	Ferrous Iron
1	Metals (F/UF)	1	0.06L Purple Plastic	-	Other

OBSERVATIONS

Notes: Weather Conditions: Temperature: 17 Overcast Precipitation: None

GROUNDWATER SAMPLING RECORD FORM

WELL ID	MW05

PROJECT INFORMATION

Project Number: 18113054
 Client: Leaf Corporation
 Site Location: 8 - 14 Thompson Street, North Geelong

Date: 01/04/19
 Sampled By: DAF

GROUNDWATER WELL DATA

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.1
Time	10:48
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	7.078
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	8.00
Bailed Thickness (m)	-

Information from file

Surveyed reference point	TOC
Depth of well (from log)	8
Depth of pump intake (mbRP)	7.5
Length of hose (m)	9
Volume in hose (L)	0.63

Note: Standard reference point is top of PVC standpipe
 mbRP - metres below top of reference point
 Hose volume - 0.1 L/m of 12mm internal diameter hose
 Hose volume - 0.05 L/m of 8mm internal diameter hose
 Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Gatic Condition: Good

EQUIPMENT RECORD

Purging & Sampling Method: Low Flow Low Flow
 WQM Model / Serial No: YSI Pro - 18L101813
 Calibrated by: Airmet
 Calibration Certificate: 28/03/2019

PURGING RECORD

Depth to water after placement of pump (mbRP)

7.081

Time		Volume Purged (L) (not cumulative)	Conductivity (uS/cm)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Depth to Water (mbRP)	Drawdown (m)	Appearance turbidity, odour, etc)	Pump Adjustments		
											CPM	Discharge Time	Refill Time
		Stabilisation Range	± 5%	± 0.5 °C	± 0.1	± 10 mV	± 10%						
14:51											2	20	10
14:56		1	13083	20.1	7.31	166.8	3.05	7.151	0.070	Yellow/Brown, Medium turbidity, no odour	2	20	10
15:01		1	13080	20.0	7.10	164.2	2.78	7.260	0.179	Yellow/Brown, Medium turbidity, no odour	1	40	20
15:06		0.5	13120	20.1	7.09	161	2.87	7.338	0.257	Pale Grey, low -> Medium turbidity, no odour	1	40	20
15:11		0.5	13152	20.2	7.09	158.3	2.73	7.390	0.309	Almost clear, low -> medium turbidity, no odour	1	40	20

Enter last 3 readings in blue boxes as check

Calculated Stabilisation Range

13083	20.10	7.10	166.80	3.05
13080	20.00	7.09	164.20	2.78
13120	20.10	7.09	161.00	2.87
0.2	0.1	0.01	6	4.6

Drawdown (m) 0.309

Total vol. purged (L)	3
Purged volume (from well not aquifer) (L)	0.618
Flow Rate (L/min)	0.1

ensure that total volume purged (above) is significantly above this figure to obtain formation water

SAMPLING RECORD

Time sampled:	15:15	Sample ID:	MW05/50010419	Rinsate	Yes
Colour	Almost Clear	Duplicate sample taken?	No	Sample ID	MW05/55010419
Odour	No	Dup ID:	No	VOC (Lab Ref)	25-Mar
Turbidity:	Low to Medium	Hydrocarbon sheen/LNAPL?	No	SOC (Lab Ref)	25-Mar
Sample Container and Preservation:	(F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)			Metal and Inorgs (Lab Ref)	28-Mar
4	Vials (P)	-	COD/NH3/Phenols (F/UNF) (P/UP)		
2	0.1L Amber	2	Ferrous Iron		
2	Metals (F/UF)	2	Other		

OBSERVATIONS

Notes: Weather Conditions: Temperature: 17 degrees, overcast
 Orange fine grained sand on top of pump. Low Yield well. Precipitation: No

GROUNDWATER SAMPLING RECORD FORM

WELL ID

MW06

PROJECT INFORMATION

Project Number: 18113054

Client: Leaf Corporation

Site Location: 8 - 14 Thompson Street, North Geelong

Date: 01/04/19

Sampled By: DAF

GROUNDWATER WELL DATA

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.1
Time	16:00
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	6.002
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	8.50
Bailed Thickness (m)	-

Information from file

Surveyed reference point	TOC
Depth of well (from log)	8.5
Depth of pump intake (mbRP)	7.25
Length of hose (m)	10
Volume in hose (L)	0.7

Note: Standard reference point is top of PVC standpipe

mbRP - metres below top of reference point

Hose volume - 0.1 L/m of 12mm internal diameter hose

Hose volume - 0.05 L/m of 8mm internal diameter hose

Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Gatic Condition:

Good

EQUIPMENT RECORD

Purging & Sampling Method: Low Flow Low Flow

WQM Model / Serial No: YSI Pro - 18L101813

Calibrated by:

Aimet

Calibration Certificate:

28/03/2019

PURGING RECORD

Depth to water after placement of pump (mbRP)

6.061

Time		Volume Purged (L) (not cumulative)	Conductivity (uS/cm)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Depth to Water (mbRP)	Drawdown (m)	Appearance turbidity, odour, etc)	Pump Adjustments		
											CPM	Discharge Time	Refill Time
		Stabilisation Range	± 5%	± 0.5 °C	± 0.1	± 10 mV	± 10%						
16:10											3	11	9
16:15		1.5	11557	19.4	6.50	191.3	1.28	6.050	-0.011	Yellow/Brown, Medium Turbidity, No Odour	4	10	5
16:20		2	11540	19.3	6.29	178.9	2.40	6.072	0.011	Yellow/Brown, Medium Turbidity, No Odour	4	10	5
16:25		2	11543	19.3	6.28	168.1	3.22	6.075	0.014	Yellow/Brown, Medium Turbidity, No Odour	4	10	5
16:30		2	11543	19.3	6.28	160.1	3.63	6.064	0.003	Pale Yellow, Low -> medium turbidity, No odour	4	10	5
16:35		2	11550	19.3	6.26	156.6	3.52	6.073	0.012	Pale Yellow, Low -> medium turbidity, No odour	4	10	5
16:40		2	11558	19.3	6.27	152.4	3.59	6.079	0.018	Clear, Low Turbidity, No odour	4	10	5

Enter last 3 readings in blue boxes as check

Calculated Stabilisation Range

Total vol. purged (L)

Purged volume (from well

not aquifer) (L)

Flow Rate (L/min)

11.5

0.036

0.4

ensure that total volume purged (above) is significantly above this figure to obtain formation water

Drawdown (m)

0.018

SAMPLING RECORD

Time sampled:	16:45
Colour	Clear
Odour	No
Turbidity:	Low

Sample Container and Preservation: (F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)

2	Vials (P)	-	UT Metals (F/UF)
1	0.1L Amber	1	0.25L Green Plastic
1	Metals (F/UF)	1	0.06L Purple Plastic

Sample ID	MW06/50010419
Duplicate sample taken?	No
Dup ID:	No
Hydrocarbon sheen/LNAPL?	No

Rinsate

-	COD/NH3/Phenols (F/UNF) (P/UP)
-	Ferrous Iron
-	Other

OBSERVATIONS

Weather Conditions: Temperature: 17 degrees, overcast

Precipitation: No

Notes:

GROUNDWATER SAMPLING RECORD FORM

WELL ID MW07

PROJECT INFORMATION

Project Number: 18113054
Client: Leaf Corporation
Site Location: 8 - 14 Thompson Street, North Geelong

Date: 03/04/19
Sampled By: DAF

GROUNDWATER WELL DATA

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.3
Time	12:10
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	4.876
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	6.95
Bailed Thickness (m)	-

Information from file

Surveyed reference point	TOC
Depth of well (from log)	6.95
Depth of pump intake (mbRP)	6
Length of hose (m)	7.5
Volume in hose (L)	0.525

Note: Standard reference point is top of PVC standpipe
mbRP - metres below top of reference point
Hose volume - 0.1 L/m of 12mm internal diameter hose
Hose volume - 0.05 L/m of 8mm internal diameter hose
Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Gatic Condition: Good

EQUIPMENT RECORD

Purging & Sampling Method: Low Flow Low Flow
WQM Model / Serial No: YSI Pro - 18L101813
Calibrated by: DAF
Calibration Certificate: 20190403_DAF

PURGING RECORD

Depth to water after placement of pump (mbRP)

4.85

Time	Volume Purged (L) (not cumulative)	Conductivity (uS/cm)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Depth to Water (mbRP)	Drawdown (m)	Appearance turbidity, odour, etc)	Pump Adjustments		
										CPM	Discharge Time	Refill Time
12:13	Stabilisation Range	± 5%	± 0.5 °C	± 0.1	± 10 mV	± 10%				2	20	10
12:19	1.2	10499	20.4	6.89	155.8	0.86	4.930	0.080	Orange/Brown, High turbidity, no odour	2	20	10
12:24	1	10469	20.3	6.79	155.8	1.71	4.954	0.104	Orange/Brown, Medium - > high turbidity, no odour	2	20	10
12:30	1.2	10460	20.2	6.80	152	2.28	4.960	0.110	Yellow/Orange, Medium turbidity, no odour	2	20	10
12:36	1.2	10442	20.2	6.82	148.7	2.42	4.963	0.113	Yellow/Orange, Medium turbidity, no odour	2	20	10
12:41	1	10437	20.1	6.85	146.1	2.50	4.960	0.110	Yellow/Orange, Medium turbidity, no odour	2	20	10
12:53	2.4	10397	19.9	6.89	139.9	2.44	4.992	0.142	Pale yellow, low -> med turbidity, no odour	2	20	10
	0											

Enter last 3 readings in blue boxes as check

Calculated Stabilisation Range

10460	20.20	6.80	148.70	2.42
10442	20.20	6.82	146.10	2.50
10437	20.10	6.85	139.90	2.44
0.1	0.1	0.05	9	1.6

Drawdown (m) 0.142

Total vol. purged (L)

8

Purged volume (from well not aquifer) (L)

0.284

Flow Rate (L/min)

0.48

ensure that total volume purged (above) is significantly above this figure to obtain formation water

SAMPLING RECORD

Time sampled: 12:55
Colour: Pale Yellow
Odour: No
Turbidity: Low to Medium

Sample ID: MW07/50030419
Duplicate sample taken? No
Dup ID: No
Hydrocarbon sheen/LNAPL? No

Rinsate

Sample Container and Preservation: (F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)

2	Vials (P)	-	UT Metals (F/UF)
1	0.1L Amber	1	0.25L Green Plastic
1	Metals (F/UF)	1	0.06L Purple Plastic

-	COD/NH3/Phenols (F/UNF) (P/UP)
-	Ferrous Iron
-	Other

OBSERVATIONS

Notes:

Weather Conditions: Temperature: 20 degrees, overcast, very light rain Precipitation: Yes

GROUNDWATER SAMPLING RECORD FORM

WELL ID

MW08

PROJECT INFORMATION

Project Number: 18113054

Client: Leaf Corporation

Site Location: 8 - 14 Thompson Street, North Geelong

Date: 03/04/19

Sampled By: DAF

GROUNDWATER WELL DATA

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.2
Time	13:15
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	5.253
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	6.94
Bailed Thickness (m)	-

Information from file

Surveyed reference point	TOC
Depth of well (from log)	6.935
Depth of pump intake (mbRP)	6.1
Length of hose (m)	7.5
Volume in hose (L)	0.525

Note: Standard reference point is top of PVC standpipe

mbRP - metres below top of reference point

Hose volume - 0.1 L/m of 12mm internal diameter hose

Hose volume - 0.05 L/m of 8mm internal diameter hose

Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Gatic Condition:

Good

EQUIPMENT RECORD

Purging & Sampling Method:

Low Flow Low Flow

WQM Model / Serial No:

YSI Pro - 18L101813

Calibrated by:

DAF

Calibration Certificate:

20190403_DAF

PURGING RECORD

Depth to water after placement of pump (mbRP)

5.189

Time	Volume Purged (L) (not cumulative)	Conductivity (uS/cm)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Depth to Water (mbRP)	Drawdown (m)	Appearance odour, etc	Pump Adjustments		
										CPM	Discharge Time	Refill Time
	Stabilisation Range	± 5%	± 0.5 °C	± 0.1	± 10 mV	± 10%						
14:38										2	20	10
14:43	1	10809	21.2	7.13	129.5	2.06	5.351	0.162	Yellow/Brown, med turbidity, no odour	2	20	10
14:46	0.6	10804	21.2	7.15	131.2	1.81	5.422	0.233	Yellow/Brown, med turbidity, no odour	1	40	20
14:51	0.5	10717	21.2	7.13	130.1	1.51	5.490	0.301	Yellow/Brown, med turbidity, no odour	1	40	20
14:56	0.5	10742	21.4	7.08	129	1.57	5.524	0.335	Yellow/Brown, med turbidity, no odour	1	40	20
15:01	0.5	10783	21.5	7.02	128.9	1.66	5.557	0.368	Yellow/Brown, med turbidity, no odour	1	40	20
15:06	0.5	10801	21.5	6.98	128.6	1.84	5.604	0.415	Yellow/Brown, med turbidity, no odour			

Enter last 3 readings in blue boxes as check

10717	21.20	7.13	129.00	1.57
10742	21.40	7.08	128.90	1.66
10783	21.50	7.02	128.60	1.84

Calculated Stabilisation Range

0.3

0.3

0.11

0

7.9

Drawdown (m)

0.415

Total vol. purged (L)

3.6

Purged volume (from well not aquifer) (L)

0.83

Flow Rate (L/min)

0.1

ensure that total volume purged (above) is significantly above this figure to obtain formation water

SAMPLING RECORD

Time sampled:	15:08
Colour	Yellow/brown
Odour	No
Turbidity:	Medium

Sample Container and Preservation: (F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)			
6	Vials (P)	-	UT Metals (F/UF)
3	0.1L Amber	3	0.25L Green Plastic
3	Metals (F/UF)	3	0.06L Purple Plastic

Sample ID:	MW08/50030419
Duplicate sample taken?	No
Dup ID:	No
Hydrocarbon sheen/LNAPL?	No

Duplicates

Yes

Sample ID

MW08/58010419

MW08/59010419

DI Water

MGT - Batch MO444 exp. 26/

OBSERVATIONS

Weather Conditions:

Temperature: 20 degrees, overcast, light rain

Precipitation: Yes

Notes:

GROUNDWATER SAMPLING RECORD FORM

WELL ID

MW09

PROJECT INFORMATION

Project Number: 18113054
Client: Leaf Corporation
Site Location: 8 - 14 Thompson Street, North Geelong

Date: 03/04/19
Sampled By: DAF

GROUNDWATER WELL DATA

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.2
Time	13:15
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	5.328
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	6.94
Bailed Thickness (m)	-

Information from file

Surveyed reference point	TOC
Depth of well (from log)	6.935
Depth of pump intake (mbRP)	6.1
Length of hose (m)	7.5
Volume in hose (L)	0.525

Note: Standard reference point is top of PVC standpipe
mbRP - metres below top of reference point
Hose volume - 0.1 L/m of 12mm internal diameter hose
Hose volume - 0.05 L/m of 8mm internal diameter hose
Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Gatic Condition: Good

EQUIPMENT RECORD

Purging & Sampling Method: Low Flow Low Flow
WQM Model / Serial No: YSI Pro - 18L101813
Calibrated by: DAF
Calibration Certificate: 20190403_DAF

PURGING RECORD

Depth to water after placement of pump (mbRP)

5.257

Time	Volume Purged (L) (not cumulative)	Conductivity (uS/cm)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Depth to Water (mbRP)	Drawdown (m)	Appearance odour, etc	Pump Adjustments		
										CPM	Discharge Time	Refill Time
	Stabilisation Range	± 5%	± 0.5 °C	± 0.1	± 10 mV	± 10%				2	20	10
13:26												
13:31	1	10499	20.4	6.89	155.8	0.86	5.438	0.181	Pale yellow, low -> med turbidity, no odour	1	40	20
13:37	0.6	9814	21.2	7.08	141.8	2.76	5.480	0.223	Pale yellow, low -> med turbidity, no odour	1	40	20
13:42	0.5	9778	21.3	7.10	132.7	3.01	5.514	0.257	Pale yellow, low -> med turbidity, no odour	1	40	20
13:49	0.7	9774	21.2	7.09	119	3.04	5.548	0.291	Pale yellow, low -> med turbidity, no odour	1	40	20
13:54	0.5	9787	21.2	7.08	114.8	2.86	5.542	0.285	Pale yellow, low -> med turbidity, no odour	1	40	20
13:59	0.5	9796	21.2	7.06	109.4	3.01	5.572	0.315	Pale yellow, low -> med turbidity, no odour	1	40	20

Enter last 3 readings in blue boxes as check

9778	21.30	7.10	119.00	3.04
9774	21.20	7.09	114.80	2.86
9787	21.20	7.08	109.40	3.01

Calculated Stabilisation Range

0.1 0.1 0.02 10 3.1

Drawdown (m) 0.315

Total vol. purged (L)

3.8

Purged volume (from well not aquifer) (L)

0.63

Flow Rate (L/min)

0.1

ensure that total volume purged (above) is significantly above this figure to obtain formation water

SAMPLING RECORD

Time sampled: 14:00
Colour: Pale yellow
Odour: No
Turbidity: Low to Medium
Sample Container and Preservation: (F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)
4 Vials (P) - UT Metals (F/UF)
2 0.1L Amber 2 0.25L Green Plastic
2 Metals (F/UF) 2 0.06L Purple Plastic

Sample ID: MW09/50030419
Duplicate sample taken? No
Dup ID: No
Hydrocarbon sheen/LNAPL? No

- COD/NH3/Phenols (F/UNF) (P/UP)
- Ferrous Iron
- Other

Rinsate: Yes
Sample ID: MW09/55010419
VOC (Lab Ref): 25-Mar
SOC (Lab Ref): 25-Mar
Metal and Inorgs (Lab Ref): MGT - Batch MO444 exp. 26/

OBSERVATIONS

Notes:

Weather Conditions: Temperature: 20 degrees, overcast, light rain

Precipitation: Yes

GROUNDWATER SAMPLING RECORD FORM

WELL ID

MW10

PROJECT INFORMATION

Project Number: 18113054

Client: Leaf Corporation

Site Location: 8 - 14 Thompson Street, North Geelong

Date: 03/04/19

Sampled By: DAF

GROUNDWATER WELL DATA

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.1
Time	10:00
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	5.792
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	6.95
Bailed Thickness (m)	-

Information from file

Surveyed reference point	TOC
Depth of well (from log)	6.95
Depth of pump intake (mbRP)	6.4
Length of hose (m)	7.5
Volume in hose (L)	0.525

Note: Standard reference point is top of PVC standpipe

mbRP - metres below top of reference point

Hose volume - 0.1 L/m of 12mm internal diameter hose

Hose volume - 0.05 L/m of 8mm internal diameter hose

Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Gatic Condition:

Good

EQUIPMENT RECORD

Purging & Sampling Method:

Low Flow Low Flow

WQM Model / Serial No:

YSI Pro - 18L101813

Calibrated by:

DAF

Calibration Certificate:

20190403_DAF

PURGING RECORD

Depth to water after placement of pump (mbRP)

5.727

Time		Volume Purged (L) (not cumulative)	Conductivity (uS/cm)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Depth to Water (mbRP)	Drawdown (m)	Appearance turbidity, odour, etc)	Pump Adjustments		
											CPM	Discharge Time	Refill Time
		Stabilisation Range	± 5%	± 0.5 °C	± 0.1	± 10 mV	± 10%						
10:16											2	20	10
10:21		1	13615	20.9	7.14	123.6	4.68	5.871	0.144	Yellow/Brown, medium turbidity, no odour	3	11	9
10:26		1.5	13552	20.8	7.05	124.3	4.00	6.050	0.323	Yellow/Brown, medium turbidity, no odour	2	20	10
10:31		1	13631	21.0	7.02	124.2	4.55	6.131	0.404	Yellow/Brown, medium turbidity, no odour	1	40	20
10:36		0.5	13757	21.6	7.03	123.9	4.13	6.175	0.448	Yellow/Brown, medium turbidity, no odour	1	40	20
10:38		0.2	13836	21.8	7.04	124.1	3.70	6.194	0.467	Yellow/Brown, medium turbidity, no odour			
		0											

Enter last 3 readings in blue boxes as check

13552	20.80	7.05	124.20	4.55
13631	21.00	7.02	123.90	4.13
13757	21.60	7.03	124.10	3.70
0.8	0.8	0.03	0	10.3

Calculated Stabilisation Range

Drawdown (m)

0.467

Total vol. purged (L)

4.2

Purged volume (from well not
aquifer) (L)

0.934

Flow Rate (L/min)

0.04

ensure that total volume purged (above) is significantly above this figure to obtain formation water

SAMPLING RECORD

Time sampled:	10:40
Colour	Yellow/Brown
Odour	No
Turbidity:	Medium

Sample Container and Preservation: (F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)			
2	Vials (P)	-	UT Metals (F/UF)
1	0.1L Amber	1	0.25L Green Plastic
1	Metals (F/UF)	1	0.06L Purple Plastic

Sample ID:	MW10/50030419
Duplicate sample taken?	No
Dup ID:	No
Hydrocarbon sheen/LNAPL?	No

Rinsate

OBSERVATIONS

Weather Conditions: Temperature: 20 degrees, overcast

Precipitation: No

Notes:

Coud not stabilise water level. Sampled at 4.2L purged. DO and temp still fluctuating.

WELL ID	MW22

Project Number: 18113054
Client: Leaf Corporation
Site Location: 8 - 14 Thompson Street, North Geelong

Date: 02/04/19
Sampled By: DAF

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.1
Time	9:45
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	4.688
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	6.96
Bailed Thickness (m)	-

Surveyed reference point	TOC
Depth of well (from log)	6.963
Depth of pump intake (mbRP)	5.8
Length of hose (m)	7
Volume in hose (L)	0.49

Note: Standard reference point is top of PVC standpipe
 mbRP - metres below top of reference point
 Hose volume - 0.1 L/m of 12mm internal diameter hose
 Hose volume - 0.05 L/m of 8mm internal diameter hose
 Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Purging & Sampling Method:	Select Option Peristaltic pump
WOM Model / Serial No:	YSI Pro - 18L101813

Calibration Certificate:	20190402_DAF

Depth to water after placement of pump (mBPD)	4.638

4.638

[illegible]

12461	21.20	6.71	8.10	2.39
12437	21.30	6.71	0.20	2.58
12295	21.30	6.70	0.80	2.36
0.7	0.1	0.01	8	4.5

Drawdown (m)	0.422

Total vol. purged (L)	4.3
Purged volume (from well not aquifer) (L)	0.844
Flow Rate (L/min)	0.1

ensure that total volume purged (above) is significantly above this figure to obtain formation water

Time sampled: 10:28 Sample ID: MW22/50020419 Rinsate

Time sampled:	10:28
Colour	Clear with minor fine brown organic particulates
Odour	No
Turbidity:	Low

Sample Container and Preservation: (F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)

2	Vials (P)	-	UT Metals (F/UF)
1	0.1L Amber	1	0.25L Green Plastic
1	Metals (F/UF)	1	0.06L Purple Plastic

Sample ID:	MW22/50020419
Duplicate sample taken?	No
Dup ID:	No
Hydrocarbon sheen/LNAPL?	No

Rinsate

Weather Conditions: Temperature: 12 degrees, clear Precipitation : No

Weather Conditions:	Temperature: 12 degrees, clear	Precipitation : No
Notes:	Well construction details unknown	

GROUNDWATER SAMPLING RECORD FORM

PROJECT INFORMATION

Project Number: 18113054

Client: Leaf Corporation

Site Location: 8 - 14 Thompson Street, North Geelong

Date: 02/04/19

Sampled By: DAF

GROUNDWATER WELL DATA

Information recorded on site

Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.1
Time	8:00
Interface probe used?	Yes
Depth to product (mbRP)*	-
Depth to water (mbRP)	5.411
Thickness of product (interface probe) (m)	-
Total depth of well (mbRP)	6.94
Bailed Thickness (m)	-

Information from file

Surveyed reference point	TOC
Depth of well (from log)	6.94
Depth of pump intake (mbRP)	6.2
Length of hose (m)	8
Volume in hose (L)	0.56

Note: Standard reference point is top of PVC standpipe
mbRP - metres below top of reference point
Hose volume - 0.1 L/m of 12mm internal diameter hose
Hose volume - 0.05 L/m of 8mm internal diameter hose
Hose volume - 0.03 L/m of 6.35mm internal diameter hose

Gatic Condition: Good

EQUIPMENT RECORD

Purging & Sampling Method: Low Flow Low Flow

WQM Model / Serial No: YSI Pro - 18L101813

Calibrated by: DAF

Calibration Certificate: 20190402_DAF

PURGING RECORD

Depth to water after placement of pump (mbRP)

5.365

Time		Volume Purged (L) (not cumulative)	Conductivity (uS/cm)	Temp (°C)	pH	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Depth to Water (mbRP)	Drawdown (m)	Appearance turbidity, odour, etc) (colour,	Pump Adjustments		
											CPM	Discharge Time	Refill Time
		Stabilisation Range	± 5%	± 0.5 °C	± 0.1	± 10 mV	± 10%						
08:28											2	20	10
08:33		1	11081	18.7	6.92	159.7	0.87	5.502	0.137	Clear, Low turbidity, no odour	2	20	10
08:38		1	11182	19.2	6.91	155.2	1.81	5.574	0.209	Clear, Low turbidity, no odour	1	40	20
08:43		0.5	11088	18.8	6.92	152.4	2.65	5.545	0.180	Clear, Low turbidity, no odour	1	40	20
08:49		0.6	11093	18.7	6.91	149.4	2.56	5.511	0.146	Clear, Low turbidity, no odour	1	40	20
08:54		0.5	11092	18.7	6.91	147.1	2.52	5.514	0.149	Clear, Low turbidity, no odour	1	40	20
09:01		0.7	11067	18.5	6.91	143.7	2.44	5.524	0.159	Clear, Low turbidity, no odour	1	40	20

Enter last 3 readings in blue boxes as check

Calculated Stabilisation Range

11088	18.80	6.92	149.40	2.56
11093	18.70	6.91	147.10	2.52
11092	18.70	6.91	143.70	2.44
0.0	0.1	0.01	6	2.4

Drawdown (m) 0.209

Total vol. purged (L)

Purged volume (from well not aquifer) (L)

Flow Rate (L/min)

4.3

0.418

0.1

ensure that total volume purged (above) is significantly above this figure to obtain formation water

SAMPLING RECORD

Time sampled: 9:05

Colour: Clear

Odour: No

Turbidity: Low

Sample ID: MW25/50020419

Duplicate sample taken?: No

Dup ID: No

Hydrocarbon sheen/LNAPL?: No

TripBlank

MW25/57020419

Sample Container and Preservation: (F = Filtered, UNF = Unfiltered, P = Preserved, UP = Unpreserved)

3

Vials (P)

-

UT Metals (F/UF)

1

0.1L Amber

1

0.25L Green Plastic

1

Metals (F/UF)

1

0.06L Purple Plastic

-

COD/NH3/Phenols (F/UNF) (P/UP)

-

Ferrous Iron

-

Other

OBSERVATIONS

Notes:

Weather Conditions: Temperature: 12 degrees, clear

Precipitation: No

Well construction details unknown

APPENDIX E

Assessment Framework

Appendix E - Assessment Framework

Environmental Site Assessment

18113054-005-R-Rev0

Appendix E: Assessment Framework



Table of Contents

1.0	SOIL ASSESSMENT CRITERIA	1
1.1	Land Protected Beneficial Uses	1
1.2	Soil Screening Criteria	1
1.2.1	Maintenance of Ecosystems	2
1.2.1.1	Ecological Investigation Levels	2
1.2.1.2	Ecological Screening Levels	3
1.3	Human Health	3
1.4	Buildings and Structures	4
1.5	Production of food, flora and fibre	4
1.6	Aesthetics	4
1.7	Assessment Criteria for Potential Off-site Disposal	5
2.0	GROUNDWATER	6
2.1	Protected Beneficial Uses of Groundwater	6
2.2	Adopted Groundwater Criteria	6

TABLES

Table 1:	Protected beneficial uses of land.....	1
Table 2:	Summary of adopted assessment criteria for soil	1
Table 3:	Conservative Victorian inner-urban soil values (ACL input parameters).....	3
Table 4:.	Basic Conceptual Site Model and Exposure Pathways	3
Table 5:	Environmental Ranking System for Soils	5

1.0 SOIL ASSESSMENT CRITERIA

1.1 Land Protected Beneficial Uses

The State Environment Protection Policy (Prevention and Management of Contaminated Land) (Land SEPP) (GoV, 2002) outlines land use categories and specifies beneficial uses which must be protected for each of these categories. In accordance with the Land SEPP, the relevant beneficial uses of land that must be protected based upon the potential land uses at the site are presented in Table 1. The land use category considered to best represent the proposed future land use is 'sensitive use other' and as such has been adopted for this assessment.

Table 1: Protected beneficial uses of land

Beneficial use	Land use category
	Sensitive Use Other
Maintenance of ecosystems <i>Natural ecosystems</i> <i>Modified ecosystems</i> <i>Highly modified ecosystems</i>	No Yes Yes
Human health	Yes
Buildings and structures	Yes
Aesthetics	Yes
Production of food, flora and fibre	Yes

1.2 Soil Screening Criteria

The adopted soil assessment criteria considered applicable for high density residential land use are summarised in Table 2 and in the following sections.

Table 2: Summary of adopted assessment criteria for soil

Beneficial use	Land use category
	Sensitive High Density
Maintenance of ecosystems <i>Modified ecosystems</i>	NEPM 2013 EILS-Urban residential and public open space. NEPM 2013 ESLs-Urban residential and public open space, coarse soil.
Human health	NEPM 2013 HIL- Residential A and B soil. NEPM 2013 Residential A and B soil HSL for vapour intrusion.
Aesthetics	The Land SEPP states that contamination must not cause the land to be offensive to the senses of humans. Generally, the land is considered to be aesthetically acceptable if the soils are free of chemical substances or wastes, staining or odours. The beneficial use is assessed by visual and olfactory judgements made during fieldworks

Beneficial use	Land use category
	Sensitive High Density
Buildings and structures	The objective for buildings and structures is to ensure that contamination does not cause the soil to be corrosive, and so affect the integrity of building materials. Potential impact to this beneficial use can be assessed by a review of physical parameters such as pH, sulphate, Redox potential and salinity where available and a comparison to NEPM EIL criterion for sulphate and the Australian Standard AS2159-2009 ' <i>Piling – Design and Installation</i> ' (AS2159-2009).
Production of food, flora and fibre	NEPM 2013 HIL- Residential A soil.
Offsite Disposal	Industrial Waste Resource Guidelines 621

1.2.1 Maintenance of Ecosystems

For assessment of the beneficial uses of modified ecosystems, the Land SEPP states that contamination must not adversely affect the maintenance of relevant ecosystems. Furthermore, the level of any indicator (i.e. potential contaminant) must not be greater than:

- Any Ecological Investigation Level (EIL) for the prescribed land use setting in accordance with the amended NEPM (NEPC, 2013);
- Levels derived using site specific risk assessment, the methodology for which is in accordance with NEPM; or
- Levels approved by the Authority (i.e. the Victorian EPA).

The amended NEPM provides guidance for derivation of Ecological Investigation Levels (EILs) and Environmental Screening Levels (ESLs) for the protection of ecosystems for an urban residential land use. Given this, the EILs for an urban residential land use will be considered. EILs have been derived for arsenic, copper, chromium (III), DDT, naphthalene, nickel, lead and zinc and are variable based upon site conditions. Site specific EILs can be derived based upon soil characteristic parameters (pH, cation exchange capacity, clay content and total organic carbon).

1.2.1.1 Ecological Investigation Levels

The Amended NEPM (2013) indicates that EILs are to be applied to the top 2 m of soil column – the root zone and depth inhabited by most soil organisms.

The amended NEPM provides guidance for derivation of Ecological Investigation Levels (EILs) and Environmental Screening Levels (ESLs) for the protection of ecosystems for urban residential. Given this, the EILs for urban residential and public open space land use will be considered. EILs have been derived for arsenic, copper, chromium (III), DDT, naphthalene, nickel, lead and zinc and are variable based upon site conditions. Site specific EILs can be derived based upon soil characteristic parameters (pH), cation exchange capacity, clay content and total organic carbon) and have been done so for pH only. Golder have derived generic ACL inputs which are considered conservative for Victorian inner-urban soil values and proposed to use these to derive the soil- specific ESL. The conservative ACL input parameters are summarised in Table 3.

Table 3: Conservative Victorian inner-urban soil values (ACL input parameters)

Soil property	Value
pH	7.5*
Clay (%)	<10%
CEC (cmol _e /kg)	10
OC (%)	0.5

* The average pH (CaCl₂) of 15 samples collected has been used – 7.5 pH units

1.2.1.2 Ecological Screening Levels

The NEPM (2013) presents ESL for TRH C₆-C₄₀, BTEX and BaP. The ESL values for TRH C₆-C₁₆ and BTEX are generally greater than the HSLs and therefore the HSL value has been adopted for these COI. Furthermore, the ESL values for BTEX are recognised as being of low reliability as they are based on limited data and therefore HSLs have been adopted over the ESLs where available.

Soil-specific ESLs have been derived for TRH C₁₆-C₄₀ for coarse and fine soils and for the purpose of this assessment we have chosen sand (coarse) as the generic soil type as a conservative screening approach due to the presence of fill material across the site.

It is noted that the adopted ecological assessment criteria are considered to be a generic Tier 1 Screen. Therefore concentrations in excess of these criteria do not imply an unacceptable risk to ecosystems. Rather an exceedance of these criteria indicates the need for further assessment to understand the risk and possibly the need for a site-specific ecological risk assessment.

1.3 Human Health

The Land SEPP states that contamination must not cause an adverse impact on human health. The adopted site criteria depend on the source of contaminant, exposure pathways and receptors affected on and off site. Table 4 outlines the basic conceptual site model and exposure pathways to on site and off site receptors on Site.

Table 4:: Basic Conceptual Site Model and Exposure Pathways

Source	Exposure Pathway	Onsite Receptor for Soil
Non-volatile contaminants in soil	Primary Contact	Site workers and site users following development, groundwater (through leaching)
Volatile contaminants in soil	Inhalation of vapours and primary contact	Site workers, site users following development, indoor and outdoor environments, groundwater (through leaching)

For the consideration of the human health of site occupants, soil results will be compared against the following amended NEPM 2013 criteria:

- HIL A (Low Density Residential) and HIL B (medium to high density residential).

The NEPM HIL criteria do not include values for exposure to vapours. Therefore, the NEPM Health Screening Levels (HSL) for soils has been adopted as TPH, BTEX and Naphthalene human health screening criteria. Soil-specific and depth specific HSLs have been derived in the NEPM for sand, silt and clay soils and the following depth intervals: 0 – < 1m, 1–< 2m, 2m to <4 m and 4 m+.

For the purpose of this report, sand (coarse) has been chosen as the generic soil type and the depth of 0–<1m has conservatively been adopted as the generic soil sample depth which is the most conservative approach for applying HSLs due to the presence of fill at the site.

In general accordance with the NEPM, it is not necessary for levels of contaminants to be below the investigation levels provided; rather, for a single population or data set where exceedances of criteria are observed, the following applies:

- 1) The arithmetic mean of the level of each contaminant is below the relevant HIL;
- 2) The standard deviation is less than half the relevant HIL; and
- 3) No individual sample records a concentration in excess of 2.5 times the relevant HIL.

It is noted that an exceedance of the adopted human health criteria does not necessarily indicate an unacceptable risk to human health in relation to the respective land use scenario. Rather, an exceedance would trigger the need for further assessment to understand the risk (under the amended NEPM 2013) and possibly the need for a site-specific human health risk assessment which would evaluate the relevant exposure setting and associated risks.

1.4 Buildings and Structures

The objective for buildings and structures is to ensure that contamination does not cause the soil to be corrosive, and so affect the integrity of building materials. Potential impact to this beneficial use can be assessed by a review of physical parameters such as pH, sulphate, redox potential and salinity where available and a comparison to NEPM EIL criterion for sulphate and the Australian Standard AS2159-2009 '*Piling – Design and Installation*' (AS2159-2009).

1.5 Production of food, flora and fibre

The Land SEPP states that contamination must not adversely affect produce quality or yield or be of greater level than that specified by the Australia New Zealand Food Authority, Food Standards Code.

The amended NEPM 2013 (NEPC, 2013) HIL A consider home grown produce that makes up less than 10% of fruit and vegetable intake. For areas of the site proposed for medium density residential land use, Golder considers the amended NEPM 2013 (NEPC, 2013) HIL A investigation levels, as adopted for the protection of human health, appropriate for the protection of production of food, flora and fibre.

1.6 Aesthetics

The Land SEPP states that contamination must not cause the land to be offensive to the senses of humans. Generally the land is considered to be aesthetically acceptable if the soils are free of chemical substances or wastes, staining or odours. The beneficial use has been assessed by visual and olfactory judgments made during fieldworks, in general accordance with Table 5 below.

An assessment of each soil sample was made in the field and involved ranking based on both odour and visible evidence of contamination. All samples were field screened using a photoionisation detector (PID) to assess for potential volatile compounds. Each soil sample recovered was given a rank according to Table 5 below.

Table 5: Environmental Ranking System for Soils

Visible Contamination		Odorous Soil	
Rank	Description	Rank	Description
0	No visible evidence of contamination	A	No odour
1	Slight evidence of visual contamination (trace quantities)	B	Slightly offensive odour
2	Visible contamination (e.g. more than trace)	C	Moderately offensive odour
3	Obviously contaminated (e.g. significant colour and staining)	D	Strongly offensive odour

1.7 Assessment Criteria for Potential Off-site Disposal

The EPA Victoria Industrial Waste Resource Guidelines (IWRG) provides guidance in relation to the sampling and categorisation of waste soils to be moved off-site for re-use or disposal. Waste classification involves an assessment of the soil, including site history, to identify which contaminants require analysis to determine the hazard category. The assessment must be for all chemical substances known and reasonably expected to be present in the waste.

Industrial waste can be categorised as one of four waste types as outlined in EPA Publication IWRG600.2 (December 2010). In this document, waste material is categorised as either:

- Fill Material;
- Solid Inert Waste from an industrial source;
- Putrescible Waste from an industrial source; or
- Prescribed Industrial Waste.

There are generally no restrictions on the handling of Fill Material and soil meeting Fill Material criteria. Fill Material generally does not require disposal at a licensed landfill. However, the EPA requirements state that the disposal of Fill Material must not give rise to detrimental environmental impacts. If soil disposed as Fill Material is subsequently found to have generated detrimental environmental impacts, then the entities involved in that disposal are at risk of EPA imposed notices and penalties. It is, therefore, usually prudent to check the potential for detrimental environmental impacts by a regime of testing prior to disposal. Soil containing significant quantities of building rubble etc can be classified as Solid Inert Waste from an industrial source and require disposal to an EPA licensed landfill.

Soils with contaminant concentrations which exceed the Fill Material criteria are classified as Prescribed Waste under the Environment Protection (Prescribed Waste) (Amendment) Regulations 2007. There are three categories of Prescribed Waste (Contaminated Soil): Category A; Category B; and Category C. The threshold contaminants concentrations for these categories and the options for their management are outlined in EPA Publication IWRG621 (June 2009) and are summarised as follows:

- *Category A* – on-site remediation, off-site remediation or storage pending availability of treatment (i.e. immobilisation). Category A waste cannot be disposed to landfill, as there are currently no Victorian facilities licensed to accept Category A waste.
- *Category B or Category C* – on-site remediation, off-site remediation or disposal to a licensed facility.

EPA criteria for Fill Material and Contaminated Soil (Category C and B) are also presented in Table B, Appendix C.

EPA Publication IWRG702 'Soil Sampling' (June 2009) provides guidance on the approach and sampling frequency for classifying soils. In brief, the guidelines recommend the following sampling frequency for classifying soils:

- One sample per 25 m³ for soil volumes of less than 200 m³ with a minimum of three samples.
- One sample per 250 m³ for soil volumes of greater than 200 m³ within a minimum of ten samples, where there is sufficient data to calculate the 95% upper confidence limit of the mean.

Transport and disposal of Prescribed Waste is required to be carried out in vehicles licensed to carry such materials utilising EPA Waste Transport Certificates. Landfills accepting Prescribed Waste will have in place their own processes and procedures to assess the material being received.

2.0 GROUNDWATER

2.1 Protected Beneficial Uses of Groundwater

The protection of groundwater in Victoria is outlined under 16(1) of the *Environmental Protection Act* (the Act) (GoV, 1970). The *State Environmental Protection Policy, Waters* (SEPP Waters) (GoV, 2018) sets out the framework for groundwater protection administered by the EPA. The SEPP Waters requires the protection of existing and potential beneficial uses of groundwater.

The relevant beneficial uses reflect the groundwater quality as reflected by the total dissolved solids (TDS) content. The laboratory reported TDS values range from 5,780 mg/L (MW09) to 8,480 mg/L (MW10) indicating that groundwater at the site falls within two segments: Segment D (5,401 to 7,100 mg/L) and Segment E (7,101 to 10,000 mg/L). For conservative purposes Segment D has been adopted for assessment purposes.

Under Segment D, the following beneficial uses are protected:

- Water dependent ecosystems and species;
- Agriculture and irrigation (stock watering);
- Industrial and commercial;
- Water-based recreation (primary contact recreation);
- Traditional Owner cultural values;
- Cultural and spiritual values;
- Buildings and structures; and
- Geothermal properties.

2.2 Adopted Groundwater Criteria

Impacted groundwater from the site has the potential to discharge in the surface waters of Corio Bay and ultimately the Port Philip Bay Catchment which are protected by the SEPP (Waters) (GoV, 2018). According to the SEPP (Waters), likely discharge of groundwater falls within the Port Philip Bay sub-segment of *Geelong Arm – the surface waters of the Werribee coastal zone extending 5km offshore from Point Cook and south to Point Richards and encompassing the Geelong Arm* and is classified as Marine/Estuarine with water

dependent ecosystems that are 'slightly to moderately modified'. The screening criteria for groundwater assessment criteria adopted for the assessment of protected beneficial uses are listed in Table 6.

Table 6: Summary of Selected Groundwater Assessment Criteria

Beneficial Use	Adopted Screening Criteria
Maintenance of Ecosystems	ANZECC (2000) Marine Water Criteria, 95% Level of Protection. Surface water in the vicinity of the site falls within the Port Philip Bay sub-segment of <i>Geelong Arm</i> (Waters of Victoria), which is listed as a slightly to moderately modified ecosystem. The protection of ecosystem criteria is applicable at the point of discharge of the groundwater. Future assessment will initially apply criteria at the point of measurement (i.e. the onsite groundwater monitoring wells) as a conservative screening method.
Agriculture and irrigation (Stock watering)	The groundwater quality objectives for the beneficial use of Stock Watering are considered to be those outlined in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC & ARMCANZ, 2000). There are no groundwater quality objectives for organic substances specifically derived for the protection of stock drinking groundwater. In the absence of a stock-specific objective, the groundwater quality objective defaults to the human health drinking water guidelines (NHMRC and NRMMC, 2011). As per the Primary Contact Recreation beneficial use, where a chemical is not covered by the ADWG, World Health Organisation (2011) guidelines for drinking water quality and US EPA (2018) Regional Screening Levels for Tap Water values have been adopted.
Primary Contact Recreation	The groundwater quality objectives for the beneficial uses Primary Contact Recreation (PCR) are those outlined in the Guidelines for Managing Risks in Recreational Waters (NHMRC 2008). The NHMRC (2008) recreational water quality guidelines refer to the raw water for drinking water purposes for toxicants, as provided in The Australian Drinking Water Guidelines (NHMRC and NRMMC 2004). The 2004 Australian Drinking Water Guidelines have been updated with a new revision released in 2011 (NHMRC and NRMMC, 2011). Criteria have been updated to replace the 2004 Australian Drinking Water Guidelines with the more recent 2011 Australian Drinking Water Guidelines. However it is noted in NHMRC (2008) that: <i>“All guideline values listed in Table 9.1 are applicable to drinking water quality and are based on the daily consumption of 2 L. These values should only be used as a guide to deriving chemical values applicable to recreational water bodies. Using a consumption factor of 2 L will result in very conservative health guideline values in recreational water. When applying these values to recreational water exposure, consumption of 100–200 mL per day should be taken into consideration.”</i>
Industrial Water Use	No criteria are specified in the SEPP (Waters) applicable to the protection of industrial and commercial water uses, however it is stated that groundwater must not be affected to the extent that industrial or commercial water quality is impacted. In the absence of such indicators, the adopted criteria are those for PCR in order to protect those workers that might incidentally come into contact with the groundwater through more generic industrial uses such as cleaning work surfaces, equipment or pavements as well as dust suppression and fire-fighting.

Beneficial Use	Adopted Screening Criteria
Traditional Owner Cultural Values and Cultural Spiritual Values	There are no known beneficial uses associated with Traditional Owner Cultural Values or Cultural and Spiritual Values within the area of the site. It is noted that any beneficial uses that were to exist relating to these, such as traditional aquaculture, fishing, harvesting, cultivation of freshwater and marine foods, fish, grasses, medicines and filtration of water holes, baptisms, water-based festivals or cultural celebrations would likely occur at the point of groundwater discharge, considered to be along the banks of Corio Bay. The criteria applicable to maintenance of ecosystems and PCR are therefore considered applicable to the protection of these beneficial uses.
Buildings and Structures	The Australian Standard for Piling Design and Installation (AS2159) (Standards Australia, 2009) provides exposure classification for concrete piles (Table 6.4.2(C)) and steel piles (Table 6.5.2(C)) based on groundwater quality parameters. This report compares the groundwater quality data to aggressivity criteria that are based on the following groundwater parameters: ■ Concrete piles - sulphates, pH, and chloride in groundwater. ■ Steel piles - pH and chloride in groundwater. In addition, the SEPP (Waters) states the beneficial use may be precluded if any chemical substance or waste has a detrimental impact on the structural integrity of buildings or other structures.
Geothermal properties	The SEPP (Waters) considers no activity must affect the geothermal properties of the groundwater, noting that specific indicators of groundwater with geothermal qualities include a temperature range of between 30 and 70 degrees Celsius. The groundwater at the site is not within this temperature range and this beneficial use does not apply.

In addition to the above adopted groundwater criteria, the risk of vapour pathway is also to be considered. Compound specific HSLs for groundwater, as presented in the NEPM (NEPC, 2013) have been developed to provide assessment of chronic human health risks and do not consider issues such as aesthetics, explosion risks or environmental considerations. It is also noted that the groundwater HSLs for vapour intrusion, do not consider human health from the direct contact pathway.

Different groundwater HSLs are provided for:

- A variety of exposure settings including: low – high density residential (HSL-A and HSL-B); recreational/open space (HSL-C); and commercial/industrial land uses (HSL-D);
- Different soil types i.e. sand/silt/clay;
- Different depths of groundwater i.e. (2 m to <4 m, 4 m to <8 m, 8 m+).

Based on proposed land use of the site and immediate surrounds where impacted groundwater is recorded, it is considered the HSL Level A/B (low to high density residential) is the appropriate health-based screening level for the groundwater analytical results.

Soil Type

The geology immediately above the water table, recorded between 4.69 (MW22) and 7.26 (MW04) below ground level, across the site comprises varying amounts of clayey sands and silty clays of the Black Rock Sandstone overlain by varying depths of fill containing coarse sand, sandy gravels.

Due to the variation of natural and fill material across the site, conservatively the sand HSLs have been selected for assessment of onsite impacts.

Depth Consideration

Depth to groundwater based on the gauging data is 4.69 (MW22) and 7.26 (MW04) across the site. As such, the HSLs depth to water of 4 m to <8 m depth has been adopted.

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
10
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
VIC
Enter traffic volume (high or low)
high

Outputs		
Land use	Ni soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	35	40
Urban residential and open public spaces	80	180
Commercial and industrial	130	300

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
10
Enter soil pH (calcium chloride method) (values from 1 to 14)
7.5
Enter organic carbon content (%OC) (values from 0 to 50%)
0.5
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
VIC
Enter traffic volume (high or low)
high

Outputs		
Land use	Cu soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	70	75
Urban residential and open public spaces	120	200
Commercial and industrial	170	290

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
10
Enter soil pH (calcium chloride method) (values from 1 to 14)
7.5
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
VIC
Enter traffic volume (high or low)
high

Outputs		
Land use	Zn soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	75	140
Urban residential and open public spaces	190	460
Commercial and industrial	280	680

Inputs
Select contaminant from list below
Cr_III
Below needed to calculate fresh and aged ACLs
Enter % clay (values from 0 to 100%)
10
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
VIC
Enter traffic volume (high or low)
high

Outputs		
Land use	Cr III soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	100	70
Urban residential and open public spaces	150	200
Commercial and industrial	200	320

APPENDIX F

QA/QC Assessment



DATA VALIDATION SUMMARY SHEET

Project Number: 18113054
 Primary Laboratory: ALS
 Secondary Laboratory: MGT
 Date/s Sampled: 25 to 29 March 2019
 Sample Medium: Soil

Sample Information

Number of Primary Samples:	51	Number of Triplicate Samples:	3
Number of Duplicate Samples:	3	Number of Other QAQC Samples:	6

Documentation and Sample Handling Information

		Comments
COC completed properly?	N	1 x FT sample ID incorrect. Amended with MGT and report reissued.
All requested analysis completed?	Y	
Samples received intact and chilled?	Y	
Samples analysed within appropriate holding times?	Y	
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?	NA	
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Batch ID	Comments
Laboratory Batch number	ALS	No detects in RB
	ALS	No detects in TB
	ALS	No detects in MB

Laboratory Control Spike (LCS) Analyses

Analyte Group		Comments
Phenolic Compounds (Halogenated)	2.3.4.5 & 2.3.4.6-Tetrachlorophenol	Recovery greater than upper control limit (133%)
Number of LCS:	385	Number of LCS Breaches
Overall Completeness	99.7%	1

Matrix Spike (MS) Analyses

Analyte Group		Comments
Total Metals by ICP-AES	EM1904560	Lead
Dissolved Mercury by FIMS	EM1904797	Mercury
Nitrite plus Nitrate as N (NOx)		Nitrite + Nitrate as N
Number of Matrix Spikes:	127	MS recovery not determined, background level greater than or equal to 4x spike level.
Overall Completeness	97.6%	Number of Matrix Spike Breaches
		3

Laboratory Duplicates (LD) Analyses

Analyte Group		Comments
Number of LD:	680	No LD breaches exist
Overall Completeness	100.0%	Number of LD Breaches
		0

Field Duplicates (FD) and Triplicates (FT) Analyses

Analyte	Primary ID	Duplicate ID	Comments
Arsenic	SB10/2001_0.30_0.40	SB10/2901	
Lead			
Zinc			
Number of FD&FT:	87		Number of FD Breaches
Overall Completeness		96.6%	3

Surrogate Compound Monitoring Analyses

Analyte Group		Comments
Number of Surrogates:	435	No surrogate exceedances were reported.
Overall Completeness	100.0%	Number of surrogate Breaches
		0

Overall Comments

On the basis of the outcome of the validation procedure employed for soil and groundwater sampling, the overall quality of the sampling and analytical data is generally considered to be of an acceptable standard for interpretive use.

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Report Reference: 18113054-005-R-Rev0
 Prepared By: LGS
 Date: 14/05/2019

Checked By: LK
 Date: 14/05/2019

SOIL

Project: Leaf Corp Due Diligence North Geelong
Duplicate Analysis RPDs
Project No. 18113054

Sample ID		TP13/1006_2.90_3.00	TP13/1806_2.90_3.00	RPD	SB10/2001_0.30_0.40	SB10/2801_0.30_0.40	RPD
Sample Type		Primary	Field Duplicate		Primary	Field Duplicate	
Date Sampled		26/03/2019	26/03/2019		29/03/2019	29/03/2019	
RPD greater than 30%							
RPD greater than 30% and laboratory results within 5 x LOR							
Analyte	Units	LOR					
Arsenic	mg/kg	5 : 2 (Interlab)	31	26	18	41	39
Cadmium	mg/kg	1 : 0.4 (Interlab)	<1	<1	0	<1	<1
Chromium	mg/kg	2 : 5 (Interlab)	17	15	13	66	59
Copper	mg/kg	5	<5	<5	0	<5	<5
Lead	mg/kg	5	7	<5	33	11	10
Mercury	mg/kg	0.1	<0.1	<0.1	0	0.1	0.1
Nickel	mg/kg	2 : 5 (Interlab)	8	9	12	29	25
Zinc	mg/kg	5	5	6	18	9	9
Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Benzo(a)pyrene TEQ (lower bound)*	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Benzo(a)pyrene TEQ (medium bound)*	mg/kg	0.5	0.6	0.6	0	0.6	0.6
Benzo(a)pyrene TEQ (upper bound)*	mg/kg	0.5	1.2	1.2	0	1.2	1.2
Benzo(b,j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
PAH (Sum of Common 16 PAHs - Lab Reported)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5
Moisture	%	1			21.6	20.7	4
Moisture Content (dried @ 40°C)	%	1	9	13.1	37		

RPDs have only been considered where a concentration is greater than 5 times the EQL. Where one result is reported <EQL, half the EQL has been calculated to determine the RPD.

SOIL

Project: Leaf Corp Due Diligence North Geelong

Duplicate Analysis RPDs

Project No. 18113054

RPD greater than 30%		Date Sampled		26/03/2019		26/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019		29/03/2019</	

RPDs have only been considered where a concentration is greater than 5 times the EQL. Where one result is reported <EQL, half the EQL has been calculated to determine the RPD.



DATA VALIDATION SUMMARY SHEET

Project Number: 18113054
Primary Laboratory: ALS
Secondary Laboratory: MGT
Date/s Sampled: 1 to 3 April 2019
Sample Medium: Groundwater

Sample Information

Number of Primary Samples:	12	Number of Triplicate Samples:	1
Number of Duplicate Samples:	1	Number of Other QAQC Samples:	6

Documentation and Sample Handling Information

		Comments
COC completed properly?	Y	
All requested analysis completed?	Y	
Samples received intact and chilled?	Y	
Samples analysed within appropriate holding times?	N	pH in groundwater was exceeded but field parameters were collected therefore no impact on investigation.
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?	NA	
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Batch ID		Comments
Laboratory Batch number	EM1904922	ALS	Sulphate (as SO ₄) (Filtered) detected at a low level in RB (MW09/55030419)
	-	ALS	No detects in TB
	-	ALS	No detects in MB

Laboratory Control Spike (LCS) Analyses

Analyte Group			Comments
Number of LCS:	37	Number of LCS Breaches	0
Overall Completeness	100.0%		

Matrix Spike (MS) Analyses

Analyte Group			Comments
Sulfate (Turbidimetric) as SO ₄	EM1904749	Sulfate (Turbidimetric) as SO ₄	MS recovery not determined, background level greater than or equal to 4x spike level.
Number of Matrix Spikes:	20	Number of Matrix Spike Breaches	1
Overall Completeness	95.0%		

Laboratory Duplicates (LD) Analyses

Analyte Group			Comments
Number of LD:	44	Number of LD Breaches	0
Overall Completeness	100.0%		

Field Duplicates (FD) and Triplicates (FT) Analyses

Analyte	Primary ID	Duplicate ID	Comments
Groundwater			
Copper	MW08/50030419	MW08/58030419	RPDs have only been considered where a concentration is greater than 5 times the EQL. Where one result is reported <EQL, half the EQL has been calculated to determine the RPD. See RPD tab for more detail. Primary results are generally higher than the duplicate result, however the variation of results is considered to be based on the heterogenous nature of the sample.
Zinc	MW08/50030419	MW08/58030419	
TRH C10 - C14 Fraction	MW08/50030419	MW08/59030419	
TRH+C10 - C36 (Sum of total)	MW08/50030419	MW08/59030419	
TRH+C10 - C40 (Sum of total)	MW08/50030419	MW08/59030419	
TRH >C10 - C16 Fraction F2	MW08/50030419	MW08/59030419	
Number of FD&FT:	226	Number of FD Breaches	7
Overall Completeness		96.9%	

Surrogate Compound Monitoring Analyses

Analyte Group			Comments
Number of Surrogates:	435	Number of surrogate Breaches	0
Overall Completeness	100.0%		

Overall Comments

On the basis of the outcome of the validation procedure employed for soil and groundwater sampling, the overall quality of the sampling and analytical data is generally considered to be of an acceptable standard for interpretive use.

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Report Reference: 18113054-005-R-Rev0
Prepared By: LGS
Date: 14/05/2019

Checked By: LK
Date:

GROUNDWATER

Project: Leaf Corp Due Diligence North Geelong
Duplicate Analysis RPDs
Project No. 18113054

		Sample ID	MW08/50030419	MW08/58030419	RPD	MW08/50030419	MW08/58030419	RPD
		Sample Type	Primary	Field Duplicate		Primary	Field Triplicate	
		Date Sampled	3/04/2019	3/04/2019		3/04/2019	3/04/2019	
RPD greater than 30%								
RPD greater than 30% and laboratory results within 5 x LOR								
Analyte	Units	LOR						
1,2,3-Trichlorobenzene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
1,2,4-Trichlorobenzene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
1,2-Dichlorobenzene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,3-Dichlorobenzene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,4-Dichlorobenzene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
2-Chlorotoluene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
4-Chlorotoluene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Bromobenzene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Chlorobenzene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Arsenic (Filtered)	mg/l	0.001	0.005	0.005	0	0.005	0.004	22
Cadmium (Filtered)	mg/l	0.0001 : 0.0002 (Interlab)	<0.0001	<0.0001	0	<0.0001	<0.0002	0
Chromium (Filtered)	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Copper (Filtered)	mg/l	0.001	0.002	0.023	168	0.002	0.002	0
Lead (Filtered)	mg/l	0.001	<0.001	0.002	120	<0.001	<0.001	0
Mercury (Filtered)	mg/l	0.0001	<0.0001	<0.0001	0	<0.0001	<0.0001	0
Nickel (Filtered)	mg/l	0.001	0.104	0.111	7	0.104	0.093	11
Zinc (Filtered)	mg/l	0.005	0.009	0.046	135	0.009	0.011	20
1,2,4-trimethylbenzene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,3,5-Trimethylbenzene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	0.001	0
Benzene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Toluene	mg/l	0.002 : 0.001 (Interlab)	<0.002	<0.002	0	<0.002	<0.001	0
Isopropylbenzene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
n-Butylbenzene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
n-Propylbenzene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
p-Isopropyltoluene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
sec-Butylbenzene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
Styrene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
tert-Butylbenzene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
Ethylbenzene	mg/l	0.002 : 0.001 (Interlab)	<0.002	<0.002	0	<0.002	<0.001	0
Xylenes (m & p)	mg/l	0.002	<0.002	<0.002	0	<0.002	<0.002	0
Xylene (o)	mg/l	0.002 : 0.001 (Interlab)	<0.002	<0.002	0	<0.002	<0.001	0
Xylenes (Sum of total) (Lab Reported)	mg/l	0.002 : 0.003 (Interlab)	<0.002	<0.002	0	<0.002	<0.003	0
Total BTEX	mg/l	0.001	<0.001	<0.001	0	<0.001	-	-
Acenaphthene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Acenaphthylene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Anthracene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Benz(a)anthracene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Benzo(a)pyrene	mg/l	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.001	0
Benzo(a)pyrene TEQ (lower bound)*	mg/l	0.0005	<0.0005	<0.0005	0	<0.0005	-	-
Benzo(b&j)fluoranthene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Benzo(g,h,i)perylene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Benzo(k)fluoranthene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Chrysene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Dibenz(a,h)anthracene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Fluoranthene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Fluorene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Indeno(1,2,3-c,d)pyrene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Naphthalene	mg/l	0.005 : 0.01 (Interlab)	0.01	0.009	11	0.01	<0.005	120
Naphthalene	mg/l	0.001 : 0.01 (Interlab)	<0.001	<0.001	0	<0.001	<0.005	0
Phenanthrene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Pyrene	mg/l	0.001	<0.001	<0.001	0	<0.001	<0.001	0
PAH (Sum of Common 16 PAHs - Lab Reported)	mg/l	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	0	<0.0005	-	-
pH (Lab)	pH Units	0.01 : 0.1 (Interlab)	7.5	7.57	1	7.5	7.8	4
Total Dissolved Solids @180°C	mg/l	10	6340	6550	3	6340	8800	32
Sulphate (as SO4) (Filtered)	mg/l	1	396	405	2	396	-	-
Nitrate (as N)	mg/l	0.01 : 0.02 (Interlab)	2.56	2.82	10	2.56	2.8	9
Nitrite (as N)	mg/l	0.01	0.02	<0.01	120	0.02	-	-
Nitrogen (Total Oxidised)	mg/l	0.01	2.58	2.82	9	2.58	-	-
Ammonia (as N)	mg/l	0.01	0.02	0.04	67	0.02	<0.01	120
Methyl Ethyl Ketone	mg/l	0.05 : 0.001 (Interlab)	<0.05	<0.05	0	<0.05	<0.001	0
2-Hexanone	mg/l	0.05	<0.05	<0.05	0	<0.05	-	-
Methyl iso-butyl ketone	mg/l	0.05 : 0.001 (Interlab)	<0.05	<0.05	0	<0.05	<0.001	0
Vinyl acetate	mg/l	0.05	<0.05	<0.05	0	<0.05	-	-
TRH C6 - C9 Fraction	mg/l	0.02	<0.02	<0.02	0	<0.02	<0.02	0
TRH C10 - C14 Fraction	mg/l	0.05	0.29	0.23	23	0.29	<0.05	168
TRH C15 - C28 Fraction	mg/l	0.1	0.34	0.28	19	0.34	<0.1	109
TRH C29 - C36 Fraction	mg/l	0.05 : 0.1 (Interlab)	0.05	<0.05	0	0.05	<0.1	0
TRH+C10 - C36 (Sum of total) (Lab Reported)	mg/l	0.05 : 0.1 (Interlab)	0.68	0.51	29	0.68	<0.1	172
TRH+C10 - C40 (Sum of total) (Lab Reported)	mg/l	0.1	0.66	0.52	24	0.66	<0.1	172
TRH C6 - C10 Fraction F1	mg/l	0.02	0.06	0.05	18	0.06	0.06	0
TRH C6 - C10 Fraction Less BTEX F1	mg/l	0.02	0.06	0.05	18	0.06	0.06	0
TRH >C10 - C16 Fraction F2	mg/l	0.1 : 0.05 (Interlab)	0.3	0.24	22	0.3	<0.05	169
TRH >C10 - C16 Fraction Less Naphthalene F2	mg/l	0.1 : 0.05 (Interlab)	0.29	0.23	23	0.29	<0.05	141
TRH >C16 - C34 Fraction F3	mg/l	0.1	0.36	0.28	25	0.36	<0.1	113
TRH >C34 - C40 Fraction F4	mg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0
1,1,1,2-Tetrachloroethane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,1,2,2-Tetrachloroethane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,1,1-Trichloroethane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,1,2-Trichloroethane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,2,3-Trichloropropane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,2-Dibromo-3-chloropropane	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
1,2-Dibromoethane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,1-Dichloroethane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,2-Dichloroethane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,1-Dichloroethene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
cis-1,2-Dichloroethene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
trans-1,2-dichloroethene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,2-Dichloropropane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
1,3-Dichloropropane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
2,2-Dichloropropane	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-

GROUNDWATER

Project: Leaf Corp Due Diligence North Geelong

Duplicate Analysis RPDs

Project No. 18113054

		Sample ID	MW08/50030419	MW08/58030419	RPD	MW08/50030419	MW08/59030419	RPD
		Sample Type	Primary	Field Duplicate		Primary	Field Triplicate	
		Date Sampled	3/04/2019	3/04/2019		3/04/2019	3/04/2019	
RPD greater than 30% and laboratory results within 5 x LOR								
Analyte	Units	LOR						
1,1-Dichloropropene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
cis-1,3-Dichloropropene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
trans-1,3-dichloropropene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
cis-1,4-Dichloro-2-butene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
trans-1,4-Dichloro-2-butene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
Bromodichloromethane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Bromoform	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Bromomethane	mg/l	0.05 : 0.001 (Interlab)	<0.05	<0.05	0	<0.05	<0.001	0
Carbon disulfide	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Carbon tetrachloride	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Chlorodibromomethane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Chloroethane	mg/l	0.05 : 0.001 (Interlab)	<0.05	<0.05	0	<0.05	<0.001	0
Chloroform	mg/l	0.005	<0.005	<0.005	0	<0.005	<0.005	0
Chloromethane	mg/l	0.05 : 0.001 (Interlab)	<0.05	<0.05	0	<0.05	<0.001	0
Dibromomethane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Dichlorodifluoromethane	mg/l	0.05 : 0.001 (Interlab)	<0.05	<0.05	0	<0.05	<0.001	0
Hexachlorobutadiene	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
Iodomethane	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Pentachloroethane	mg/l	0.005	<0.005	<0.005	0	<0.005	-	-
Trichloroethene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Tetrachloroethene	mg/l	0.005 : 0.001 (Interlab)	<0.005	<0.005	0	<0.005	<0.001	0
Trichlorofluoromethane	ug/L	50 : 1 (Interlab)	<50	<50	0	<50	<1	0
Vinyl chloride	mg/l	0.05 : 0.001 (Interlab)	<0.05	<0.05	0	<0.05	<0.001	0

RPDs have only been considered where a concentration is greater than 5 times the EQL. Where one result is reported <EQL, half the EQL has been calculated to determine the RPD.

APPENDIX G

Analytical Results Tables

C:\Users\dlittlejohn\Golder Associates\18113054_Leaf Corp Due Diligence Nth Geelong - ESA REPORT\Appendix G - Analytical Tables\Table G1 - Soil NEPM Screening.xlsm , 14/05/2019

	Asbestos (1-Detect or <1-Non-Detect)	Halogenated Benzenes										Heavy Metals										Herbicides	MAH																					
	No	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	4-Chlorotoluene	Bromobenzene	Chlorobenzene	Hexachlorobenzene	Arsenic	Cadmium	Chromium #	Chromium (hexavalent) #	Copper #	Lead	Mercury	Molybdenum	Nickel #	Selenium	Silver	Tin	Zinc #	Dinoseb	1,2,4-trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Toluene	Isopropylbenzene	n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Ethylbenzene	Xylenes (m & p)	Xylene (o)	Xylenes (Sum of total) (Lab Reported)	Total MAHs (Lab Reported)	Total BTEX				
EQL	0.1	0.01	0.02		0.02			0.02	0.03	5	1	2	0.5	5	5	0.1	2	2	5	2	5	5	5	0.5	0.5	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.2		
NEPM 2013 EILs-Urban Residential and public open space										100		200	200	1100	1100			180				460																						
NEPM 2013 ESL- Urban residential and public open space, Fine Soil																										65	105													45				
NEPM 2013 ESL-Urban residential and public open space, Coarse Soil																											50	85													105			
NEPM 2013 HIL- Residential A Soil								10	100	20			100	6000	300	40		400	200			7400																						
NEPM 2013 HIL-Residential B Soil								15	500	150			500	30000	1200	120		1200	1400			60000																						
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																																												
0-1m																											0.5	160														40		
1-2m																											0.5	220														60		
2-4m																											0.5	310														95		
>4m																											0.5	540														170		

Field_ID	Location	Sample Depth	Sample Date
Notes			
# Site derived EILs based on high trafficability; aged contamination; pH: 7.5: clay (<10%); CEC (10 cmolc/kg); OC (0.5%)			
# EIL criteria for chromium 111 species. Criteria has been assessed as a conservative assessment			

Statistical Summary		2	20	20	5	20	5	5	20	26	70	70	55	20	70	70	70	20	70	20	20	20	70	20	11	11	37	37	11	6	6	6	6	26	6	37	37	37	37	20	7	
Number of Results		2	0	0	0	0	0	0	0	0	53	2	55	0	34	45	19	3	67	0	0	0	67	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1	0	0
Number of Detects		2	0	0	0	0	0	0	0	0	53	2	55	0	34	45	19	3	67	0	0	0	67	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1	0	0
Minimum Concentration		1	<0.01	<0.02	<0.5	<0.02	<0.5	<0.5	<0.02	<0.03	<2	<0.4	6.6	<0.5	<5	<5	<0.1	<2	<5	<2	<0.2	<5	<5	<5	<0.5	<0.5	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.2	<0.1	<0.3	<0.2	<0.2	
Minimum Detect		1	ND	ND	ND	ND	ND	ND	ND	ND	2.1	1	6.6	ND	5	6	0.1	4	6	ND	ND	ND	5	ND	ND	ND	ND	3.9	ND	ND	ND	ND	ND	ND	ND	24	140	63	210	ND	ND	
Maximum Concentration		1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.13	240	2	98	<1	50	216	1.6	5	161	<5	<2	<10	291	<20	<0.5	<0.5	<1	3.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	24	140	63	210	<0.5	<0.2	
Maximum Detect		1	ND	ND	ND	ND	ND	ND	ND	ND	240	2	98	ND	50	216	1.6	5	161	ND	ND	ND	291	ND	ND	ND	ND	3.9	ND	ND	ND	ND	ND	ND	ND	24	140	63	210	ND	ND	
Average Concentration			0.066	0.07	0.25	0.07	0.25	0.25	0.07	0.021	21	0.45	30	0.31	11	11	0.099	1.9	39	2.1	0.78	3.1	32	4.4	0.25	0.25	0.092	0.27	0.25	0.25	0.25	0.25	0.25	0.25	0.82	4	1.9	5.9	0.14	0.1		
Median Concentration		1	0.005	0.01	0.25	0.01	0.25	0.25	0.01	0.015	15	0.5	25	0.25	2.5	7	0.05	1	26	2.5	1	2.5	20.5	2.5	0.25	0.25	0.1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.1	0.1	
Standard Deviation			0.11	0.11	0	0.11	0	0	0.11	0.01	34	0.24	18	0.11	13	26	0.19	1.3	41	0.67	0.4	1.1	39	3.3	0	0	0.073	0.62	0	0	0	0	0	0	0	3.9	23	10	34	0.067	0	
Number of Guideline Exceedances		0	0	0	0	0	0	0	0	0	3	0	0	0	70	0	0	0	70	0	0	0	70	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0		
Number of Guideline Exceedances(Detects Only)		0	0	0	0	0	0	0	0	0	3	0	0	0	70	0	0	0	70	0	0	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		

[illegible]

Field ID	Location	Sample Depth	Sample Date
Notes			
# Site derived EILs based on high trafficability; aged contamination; pH: 7.5: clay (<10%); CEC 1			
# EIL criteria for chromium 111 species. Criteria has been assessed as a conservative assessor			

Page 4 of 8 C:\Users\dlittlejohn\Golder Associates\18113054_Leaf Corp Due Diligence\Nth Geelong - ESA REPORT\Appendix G - Analytical Tables\Table G1 - Soil NEPM Screening.xlsx, 14/05/201

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		Volatile Organic Compounds																																							
		Total Volatile Chlorinated Hydrocarbons	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2,3-Trichloropropane	1,2-Dibromoethane	1,1-Dichloroethane	1,2-Dichloroethane	cis-1,2-Dichloroethene	trans-1,2-dichloroethene	1,2-Dichloropropane	1,3-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-dichloropropene	Allyl chloride	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorinated Hydrocarbons (Lab Reported)	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	Dibromomethane	Dichlorodifluoromethane	Dichloromethane	Hexachlorobutadiene	Iodomethane	Other Chlorinated Hydrocarbons (IWRG Lab Reported)	Trichloroethene	Tetrachloroethene	Trichlorofluoromethane	Vinyl chloride	Other Chlorinated Hydrocarbons (IWRG Calculated)		
EQL		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		0.01	0.01	0.02	0.01	0.04				0.02	0.01	0.01	0.02										0.01				0.02				0.4	0.02		0.01	0.02	0.02			0.02		mg/kg
	NEPM 2013 EILs-Urban Residential and public open space																																								
	NEPM 2013 ESL- Urban residential and public open space, Fine Soil																																								
	NEPM 2013 ESL-Urban residential and public open space, Coarse Soil																																								
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Field_ID	Location	Sample Depth	Sample Date
Notes			
# Site derived EILs based on high trafficability; aged contamination; pH: 7.5: clay (<10%); CEC (1			
# EIL criteria for chromium 111 species. Criteria has been assessed as a conservative assessmer			

Statistical Summary																																									
Number of Results	15	20	20	20	20	5	5	5	20	20	20	20	5	5	5	5	5	5	5	5	5	5	20	5	5	5	20	5	5	5	20	20	5	20	20	20	5	20	5		
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Concentration	<0.01	<0.01	<0.02	<0.01	<0.04	<0.5	<0.5	<0.5	<0.02	<0.01	<0.01	<0.02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.5	<0.5	<0.5	<0.02	<0.5	<0.5	<0.5	<0.4	<0.02	<0.5	<0.01	<0.02	<0.02	<0.5	<0.02	<0.1			
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1		
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	0.005	0.066	0.07	0.066	0.078	0.25	0.25	0.25	0.07	0.066	0.066	0.07	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.066	0.25	0.25	0.25	0.07	0.25	0.25	0.25	0.21	0.07	0.25	0.066	0.07	0.07	0.25	0.07	0.05			
Median Concentration	0.005	0.005	0.01	0.005	0.02	0.25	0.25	0.25	0.01	0.005	0.005	0.01	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.005	0.25	0.25	0.25	0.01	0.25	0.25	0.25	0.2	0.01	0.25	0.005	0.01	0.01	0.25	0.01	0.05			
Standard Deviation	0	0.11	0.11	0.11	0.1	0	0	0	0.11	0.11	0.11	0.11	0	0	0	0	0	0	0	0	0	0	0.11	0	0	0	0.11	0	0	0	0.022	0.11	0	0.11	0.11	0	0.11	0	0		
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Statistical Summary

	Asbestos (1-Detect or <1-Non-Detect)	Halogenated Benzenes										Heavy Metals												Herbicides	MAH																			
		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	4-Chlorotoluene	Bromobenzene	Chlorobenzene	Hexachlorobenzene	Arsenic	Cadmium	Chromium	Chromium (hexavalent)	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc	Dinoseb	1,2,4-trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Toluene	Isopropylbenzene	n-Butylbenzene	n-Propylbenzene	p-isopropyltoluene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Ethylbenzene	Xylenes (m & p)	Xylene (o)	Xylenes (Sum of total) (Lab Reported)	Total MAHs (Lab Reported)	Total BTEX				
EQL		0.1	0.01	0.02		0.02		0.02	0.03	5	1	2	0.5	5	5	0.1	2	2	5	2	5	5	5	5	0.5	0.5	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.2		
VIC EPA IWRG621 Cat B										2000	400		2000	20000	6000	300	4000	12000	200	720		140000			16																240			
VIC EPA IWRG621 Cat C										500	100		500	5000	1500	75	1000	3000	50	180	500	35000			4																70			
VIC EPA IWRG621 Fill Material									20	3		1	100	300	1	40	60	10	10	50	200			1																7				
Field_ID	Location_Code	Sample Depth	Sample Date	2	20	20	5	20	5	5	20	26	70	70	55	20	70	70	20	20	20	70	20	20	11	11	37	37	11	6	6	6	6	26	6	37	37	37	37	20	7			
Number of Results				2	0	0	0	0	0	0	0	0	53	2	55	0	34	45	19	3	67	0	0	0	67	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	0	0		
Number of Detects				1	<0.01	<0.02	<0.5	<0.02	<0.5	<0.5	<0.02	<0.03	<2	<0.4	6.6	<0.5	<5	<5	<0.1	<2	<5	<2	<0.2	<5	<5	<0.5	<0.5	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.2	<0.1	<0.3	<0.2	<0.2	
Minimum Concentration				1	ND	ND	ND	ND	ND	ND	ND	ND	2.1	1	6.6	ND	5	6	0.1	4	6	ND	ND	ND	5	ND	ND	ND	ND	3.9	ND	ND	ND	ND	ND	ND	24	140	63	210	ND	ND		
Minimum Detect				1	ND	ND	ND	ND	ND	ND	ND	ND	2.1	1	6.6	ND	5	6	0.1	4	6	ND	ND	ND	5	ND	ND	ND	ND	3.9	ND	ND	ND	ND	ND	ND	24	140	63	210	ND	ND		
Maximum Concentration				1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.13	240	2	98	<1	50	216	1.6	5	161	<5	<2	<10	291	<20	<0.5	<0.5	<1	3.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	24	140	63	210	<0.5	<0.2
Maximum Detect				1	ND	ND	ND	ND	ND	ND	ND	ND	240	2	98	ND	50	216	1.6	5	161	ND	ND	ND	291	ND	ND	ND	ND	3.9	ND	ND	ND	ND	ND	ND	24	140	63	210	ND	ND		
Average Concentration					0.066	0.07	0.25	0.07	0.25	0.25	0.07	0.021	21	0.45	30	0.31	11	11	0.099	1.9	39	2.1	0.78	3.1	32	4.4	0.25	0.25	0.092	0.27	0.25	0.25	0.25	0.25	0.25	0.82	4	1.9	5.9	0.14	0.1			
Median Concentration				1	0.005	0.01	0.25	0.01	0.25	0.25	0.01	0.015	15	0.5	25	0.25	2.5	7	0.05	1	26	2.5	1	2.5	20.5	2.5	0.25	0.25	0.1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.1	0.1			
Standard Deviation					0.11	0.11	0	0.11	0	0	0.11	0.01	34	0.24	18	0.11	13	26	0.19	1.3	41	0.67	0.4	1.1	39	3.3	0	0	0.073	0.62	0	0	0	0	0	0	3.9	23	10	34	0.067	0		
Number of Guideline Exceedances				0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	1	0	13	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Number of Guideline Exceedances(Detects Only)				0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	1	0	13	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

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Statistical Summary

	Phenolics										Phenolics-Halogenated										Polychlorinated Biphenyls										Sample Quality Parameters					Solvents		
	2,4-Dimethylphenol	2,4-Dinitrophenol	2-Methylphenol	2-Nitrophenol	3- & 4- Methylphenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexylphenol	4-Nitrophenol	Phenol	Non-Halogenated Phenols (Sum of total)	2,3,5,6-Tetrachlorophenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,6-Dichlorophenol	2,3,4,5 & 2,3,4,6-Tetrachlorophenol	2-Chlorophenol	4-Chloro-3-methylphenol	Pentachlorophenol	Tetrachlorophenols (Sum of total)	Halogenated Phenols (Sum of total)	Aroclor 1016	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1221	PCB (Sum of Total-Lab Reported)	pH_CaCl2	Cyanide (total)	Fluoride	Moisture	Moisture Content (dried @ 40°C)	Methyl Ethyl ketone	Methyl Iso-butyl ketone	Acetone	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Unit	mg/kg	mg/kg	%	%	mg/kg	mg/kg	mg/kg	
	1	5	1	1	1	5		5		1	0.03	0.05	0.05	0.03	0.03	0.05	0.03	0.03	0.2		0.03									0.1	0.1	1	40	1	1			
										2200												320								0		10000	40000					
										560												10								0		2500	10000					
									60												1								2	4-9	50	450						

Field_ID	Location_Code	Sample Depth	Sample Date	20	20	20	20	20	20	20	20	20	20	20	15	20	20	20	20	20	15	20	20	20	5	20	5	5	5	5	5	5	5	20	15	20	20	40	30	5	5	5
Number of Results				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	1	18	40	29	0	0	0		
Number of Detects				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	1	18	40	29	0	0	0		
Minimum Concentration				<0.5	<5	<0.2	<1	<0.4	<5	<5	<5	<0.5	<1	<0.03	<0.05	<0.03	<0.03	<0.2	<1	<0.03	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5.3	<1	50	2.9	<1	<0.5	<0.5	<0.5			
Minimum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.3	4	50	2.9	5	ND	ND	ND			
Maximum Concentration				<1	<5	<1	<1	<1	<5	<20	<5	<1	<20	<0.13	<1	<1	<0.5	<0.5	<0.13	<0.5	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	8	<5	340	29	49.5	<0.5	<0.5	<0.5			
Maximum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8	4	340	29	49.5	ND	ND	ND			
Average Concentration				0.44	2.5	0.4	0.5	0.43	2.5	4.4	2.5	0.44	2.9	0.018	0.15	0.15	0.076	0.076	0.028	0.076	0.14	0.2	0.5	0.14	0.05	0.05	0.05	0.05	0.05	0.058	7.5	1.2	169	13	15	0.25	0.25	0.25				
Median Concentration				0.5	2.5	0.5	0.5	0.5	2.5	2.5	0.5	0.5	0.015	0.025	0.025	0.015	0.015	0.025	0.015	0.025	0.015	0.1	0.5	0.015	0.05	0.05	0.05	0.05	0.05	0.05	7.7	0.5	160	13.6	14	0.25	0.25	0.25				
Standard Deviation				0.11	0	0.18	0	0.13	0	3.3	0	0.11	4.2	0.013	0.21	0.21	0.1	0.1	0.01	0.1	0.21	0.18	0	0.21	0	0	0	0	0	0	0.034	0.67	1.1	96	5.9	9.7	0	0	0			
Number of Guideline Exceedances				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Number of Guideline Exceedances(Detects Only)				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

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Field_ID	Location_Code	Sample_Depth	Sample Date																																							
Number of Results																																										
Number of Detects																																										
Minimum Concentration																																										
Minimum Detect																																										
Maximum Concentration																																										
Maximum Detect																																										
Average Concentration																																										
Median Concentration																																										
Standard Deviation																																										
Number of Guideline Exceedances																																										
Number of Guideline Exceedances (Detects Only)																																										

	Sample Quality Parameters							Halogenated Benzenes								Heavy Metals								
	pH (Lab)	Total Dissolved Solids @180°C	Sulphate (as SO4) (Filtered)	Nitrate (as N)	Nitrite (as N)	Nitrogen Total Oxidised)	Ammonia (as N)	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2-Chlorotoluene	4-Chlorotoluene	Bromobenzene	Chlorobenzene	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Zinc (Filtered)
	pH Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	0.01	10		0.01	0.01	0.01	0.01	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005								
ADWG 2011 Health (x 10 for inorganics)			5000							15		0.4				3	0.1	0.02		20	0.1	0.01	0.2	
ANZECC 2000 Livestock Drinking Water Trigger Value (low risk)			1000	90													0.5	0.01	1	0.4	0.1	0.002	1	20
ANZECC 2000 Marine 95%					1.7#		0.91#		0.08									0.0055		0.0013	0.0044	0.0004	0.07	0.015
ANZECC 2000 Marine 95% Low Reliability																								
NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Sand 4-8m																								

Field_ID	Location_Code	Well	Sampled_Date_Time	-	8600	-	-	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	0.002	<0.0002	0.002	0.011	0.001	<0.0001	0.041	0.057
MW01	MW01	-	7/11/2018	-	8600	-	-	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	0.002	<0.0002	0.002	0.011	0.001	<0.0001	0.041	0.057
MW01/50020419	MW01	-	2/04/2019	7.47	6500	544	10.3	<0.01	10.3	0.04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.001	<0.0001	0.002	0.013	<0.001	<0.0001	0.081	0.039
MW02	MW02	-	7/11/2018	-	6600	-	-	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	0.04	<0.0002	<0.001	0.001	<0.001	<0.0001	0.013	0.016
MW02/50020419	MW02	-	2/04/2019	6.71	6620	459	2.75	<0.01	2.75	0.04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.018	<0.0001	<0.001	0.018	0.001	<0.0001	0.045	0.098
MW03	MW03	-	7/11/2018	-	7000	-	-	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	0.005	<0.0002	0.002	0.018	<0.001	<0.0001	0.009	0.093
MW03/50020419	MW03	-	4/04/2019	7.47	6790	746	5.15	0.05	5.2	0.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.003	<0.0001	<0.001	0.018	0.001	<0.0001	0.06	0.102
MW04	MW04	-	7/11/2018	-	1800	-	-	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	0.003	<0.0002	0.001	0.004	<0.001	<0.0001	0.004	0.021
MW04/50010419	MW04	-	1/04/2019	7.64	6800	525	9.69	0.02	9.71	0.02	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.004	<0.0001	0.004	0.016	0.001	<0.0001	0.006	0.059
MW05	MW05	-	7/11/2018	-	9400	-	-	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	0.004	<0.0002	0.012	0.018	0.001	<0.0001	0.011	0.077
MW05/50010419	MW05	-	1/04/2019	7.51	8410	640	11.9	<0.01	11.9	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.0001	0.002	0.033	0.002	<0.0001	0.014	0.111
MW06	MW06	-	7/11/2018	-	6500	-	-	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	0.002	<0.0002	0.004	0.007	<0.001	<0.0001	0.007	0.063
MW06/50010419	MW06	-	1/04/2019	6.77	7290	584	7.42	<0.01	7.42	0.02	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.0001	0.004	0.029	0.002	<0.0001	0.068	0.076
MW07/50030419	MW07	-	3/04/2019	7.47	6250	532	11.2	0.03	11.2	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.0001	0.001	0.017	<0.001	<0.0001	0.101	0.029
MW08/50030419	MW08	-	3/04/2019	7.5	6340	396	2.56	0.02	2.58	0.02	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.0001	<0.001	0.023*	<0.001	<0.0001	0.104	0.046
MW09/50030419	MW09	-	3/04/2019	7.59	5780	236	0.02	<0.01	0.02	0.04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.009	<0.0001	0.001	0.01	0.001	<0.0001	0.169	0.05
MW10/50030419	MW10	-	3/04/2019	7.47	8480	705	6.22	0.05	6.27	0.03	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.0001	0.001	0.023	0.001	<0.0001	0.015	0.089
MW22	MW22	-	7/11/2018	-	7400	-	-	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	0.004	<0.0002	<0.001	0.007	<0.001	<0.0001	0.038	0.05
MW22/50020419	MW22	-	2/04/2019	7.31	7420	816	0.09	0.02	0.11	0.22	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.02	<0.0001	<0.001	0.001	<0.001	<0.0001	0.092	0.021
MW25	MW25	-	7/11/2018	-	8600	-	-	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	0.001	<0.0002	0.001	0.005	<0.001	<0.0001	0.017	0.022
MW25/50020419	MW25	-	2/04/2019	7.06	7400	741	9.23	<0.01	9.23	0.06	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.002	<0.0001	0.001	0.021	0.001	<0.0001	0.168	0.062

Notes

ANZECC & ARMCAZ 200 Trigger Value for Marine Water - Slightly to moderately disturbed ecosystems

* WHO (2011) Guideline for Drinking Water Quality adopted in the absence of Australian criteria

- for conservative purposes the QA duplicate or triplicate result has been assessed

Statistical Summary

Number of Results	12	20	12	12	12	12	12	12	12	20	20	20	12	20	20	20	20	20	20	20	20	20	20	20
Number of Detects	12	20	12	12	6	12	12	0	0	0	0	0	0	0	0	0	19	0	14	20	10	0	20	20
Minimum Concentration	6.71	1800	236	0.02	<0.01	0.02	0.02	<0.005	<0.005	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	0.001	<0.001	<0.0001	0.004	0.016
Minimum Detect	6.71	1800	236	0.02	0.02	0.02	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001	ND	0.001	0.001	0.001	ND	0.004	0.016
Maximum Concentration	7.64	9400	816	11.9	0.05	11.9	0.22	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	<0.0002	0.012	0.033	<0.0001	0.169	0.111	
Maximum Detect	7.64	9400	816	11.9	0.05	11.9	0.22	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.04	ND	0.012	0.033	0.002	ND	0.169	0.111
Average Concentration	7.3	6999	577	6.4	0.018	6.4	0.058	0.0025	0.0025	0.0017	0.0017	0.0017	0.0025	0.0017	0.0017	0.0017	0.0067	0.00007	0.0021	0.015	0.00085	0.00005	0.053	0.059
Median Concentration	7.47	6900	564	6.82	0.013	6.845	0.04	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0035	0.00005	0.001	0.0165	0.00075	0.00005	0.0395	0.058
Standard Deviation	0.31	1557	166	4.2	0.017	4.2	0.056	0	0	0.001	0.001	0.001	0	0.001	0.001	0.001	0.0094	0.000025	0.0026	0.0089	0.00046	0	0.052	0.029
Number of Guideline Exceedances	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	18	0	0	11	20
Number of Guideline Exceedances(Detects Only)	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	18	0	0	11	20

Field ID	Location	Code	Well	Sampled Date	Time
MW01	-	MW01	-	7/11/2018	-
MW01/50020419	-	MW01	-	2/04/2019	-
MW02	-	MW02	-	7/11/2018	-
MW02/50020419	-	MW02	-	2/04/2019	-
MW03	-	MW03	-	7/11/2018	-
MW03/50020419	-	MW03	-	4/04/2019	-
MW04	-	MW04	-	7/11/2018	-
MW04/50010419	-	MW04	-	1/04/2019	-
MW05	-	MW05	-	7/11/2018	-
MW05/50010419	-	MW05	-	1/04/2019	-
MW06	-	MW06	-	7/11/2018	-
MW06/50010419	-	MW06	-	1/04/2019	-
MW07/50030419	-	MW07	-	3/04/2019	-
MW08/50030419	-	MW08	-	3/04/2019	-
MW09/50030419	-	MW09	-	3/04/2019	-
MW10/50030419	-	MW10	-	3/04/2019	-
MW22	-	MW22	-	7/11/2018	-
MW22/50020419	-	MW22	-	2/04/2019	-
MW25	-	MW25	-	7/11/2018	-
MW25/50020419	-	MW25	-	2/04/2019	-

Notes
ANZECC & ARMCANZ 200 Trigger Value for Marine Water - Slightly toxic
^ WHO (2011) Guideline for Drinking Water Quality adopted in the absence of local data
* - for conservative purposes the QA duplicate or triplicate result has been used

[illegible]

[illegible]

* - for conservative purposes the QA duplicate or triplicate result has been

[illegible]

[illegible]

Notes
ANZECC & ARMCANZ 200 Trigger Value for Marine Water - Slightly toxic
^ WHO (2011) Guideline for Drinking Water Quality adopted in the absence of local data
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[illegible]

APPENDIX H

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.

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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.

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Any uncertainty as to the extent to which this Report can be used or relied upon in any respect should be referred to Golder for clarification



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