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Validation Report - Remediation of Localised Hydrocarbon Impacted Soils

Broken Hill Battery Energy Storage System Project

27-Jan-2022
Broken Hill Battery Energy Storage System Project
Commercial-in-Confidence

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Broken Hill Battery Energy Storage System Project

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Document Validation Report - Remediation of Localised Hydrocarbon Impacted Soils

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Executive Summary

AECOM Australia Pty Ltd (AECOM) was commissioned by AGL Energy Limited (AGL) to prepare a Validation Report for the remediation of localised petroleum hydrocarbon impacted material at 74-80 Pinnacles Place, Broken Hill NSW 2880 (Lots 57 and 58 of DP 258288) (the Site). These works were conducted during December 2021 in accordance with the *Remedial Action Plan (RAP) - Localised Petroleum Impacted Soils* (AECOM, 2021b) prepared for the Site.

This Validation Report has been prepared to demonstrate that the remediation works have been completed and to address consent Condition 29 and 30 of the approved Environmental Impact Statement (EIS) in support of the State Significant Development (SSD) (ref 11437498) for the construction, operation and maintenance of a battery energy storage system (BESS) facility at the Site (the Project):

Condition 29 - Prior to carrying out any development, the Applicant must develop and implement a Remedial Action Plan prepared in accordance with the relevant guidelines produced or approved under the Contaminated Land Management Act 1997. Remediation works must be undertaken by a suitably qualified and experienced consultant (s).

Condition 30 – Within one month of the completion of the remediation works, the Applicant must submit a copy of a validation report/letter to the Planning Secretary, which has been prepared, or reviewed and approved, by a consultant certified under the Environment Institute of Australia and New Zealand Certified Environmental Practitioner (Site Contamination) Scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme.

The objective of this Validation Report is to document the remedial works conducted and assess the analytical data of the remaining soils and imported material used for reinstatement of the area for the Site's intended commercial/industrial land use.

This Validation Report and the remedial works documented in the RAP (AECOM, 2021b) are limited to the vicinity of the location of an Intermediate Bulk Container (IBC) at the southern boundary of the Site, where petroleum hydrocarbon impacted soils were encountered during the Detailed Site Investigation and Assessment (DSI) (AECOM, 2021a). The impacted soils had an estimated area of 1 m x 0.5 m, to 0.5 m depth (approximate volume of 0.25 m³) and the contaminants of potential concern (CoPC) were identified as Total Petroleum Hydrocarbons (TPH) and Total Recoverable Hydrocarbons (TRH). Based on the findings of the DSI, the petroleum hydrocarbon impacted material was classified as 'Hazardous Waste' in accordance with the NSW EPA guidelines¹.

The remedial works conducted on 8 December 2021 comprised the following:

- Removal of the IBC from the Site;
- Excavation and removal of the localised petroleum impacted materials by Solcon Trading Pty Limited (Solcon) to Integrated Waste Services (IWS) – Dublin located at Port Wakefield Road, Lower Light, South Australia (SA), an offsite landfill facility licensed for receipt of Hazardous Waste;
- Validation sampling and analysis of remaining soils within the excavation pit for CoPC including TPH/TRH; and
- Placement and reinstatement of imported materials sourced by Solcon into the excavation pit, followed by assessment of the imported material for suitability at the Site.

Validation samples were collected from the walls and floor of the excavation pit following the removal of impacted materials. Sampling and analysis of underlying soils within the excavation indicated no CoPC impacts in the remaining soils.

Validation sampling of imported quarried materials (identified as "Cracker Dust"/screened blue stone fines) was undertaken prior to backfilling of the excavation. Import materials were analysed for a range

¹ NSW EPA Waste Classification Guidelines Part 1: Classifying waste, dated November 2014

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of contaminants associated with the source of the material, including heavy metals (As, Cd, Cr, Cu, Ni, Zn, Pb and Hg), TPH/TRH, benzene, toluene, ethylbenzene, xylenes and naphthalene (BTEXN), Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated biphenyls (PCBs) and asbestos containing materials. Analysis of the imported materials indicated concentrations of potential contaminants either less than the laboratory Limit of Reporting (LOR) or the adopted criteria for ongoing commercial/industrial land use.

Based on the remediation and validation works completed on the Site, it is considered that:

- Remedial works have been implemented in accordance with the RAP (AECOM, 2021b), addressing Condition 29 of the approved EIS;
- The Site is considered suitable for the ongoing commercial/industrial land use for the development of the BESS; and
- Validation Report has been reviewed by a consultant certified under the Certified Environmental Practitioner (Site Contamination) (CEnvP[SC]) Scheme, addressing Condition 30 of the approved EIS.

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1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was commissioned by AGL Energy Limited (AGL) to prepare a Validation Report for the remediation of localised petroleum hydrocarbon impacted material at 74-80 Pinnacles Place, Broken Hill NSW 2880 (Lots 57 and 58 of DP 258288) (the Site). These works were conducted during December 2021 in accordance with the *Remedial Action Plan (RAP) - Localised Petroleum Impacted Soils* (AECOM, 2021b) prepared for the Site.

The Site locality is shown on **Figure F1, Appendix A** and Site boundary and layout is shown on **Figure F2, Appendix A**. The area identified for remedial works is shown on **Figure F3, Appendix A**.

1.1 Objectives

The purpose of the remedial works in accordance with the RAP (AECOM, 2021b), is in support of the State Significant Development (SSD) (ref 11437498) for the construction, operation and maintenance of a battery energy storage system (BESS) facility on the Site.

This Validation Report has been prepared to address consent condition 29 and 30 of the approved Environmental Impact Statement (EIS) in support of the SSD on the Site (the Project), as described below:

- *Condition 29 - Prior to carrying out any development, the Applicant must develop and implement a Remedial Action Plan prepared in accordance with the relevant guidelines produced or approved under the Contaminated Land Management Act 1997. Remediation works must be undertaken by a suitably qualified and experienced consultant (s).*
- *Condition 30 – Within one month of the completion of the remediation works, the Applicant must submit a copy of a validation report/letter to the Planning Secretary, which has been prepared, or reviewed and approved, by a consultant certified under the Environment Institute of Australia and New Zealand Certified Environmental Practitioner (Site Contamination) Scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme.*

1.2 Background

A Detailed Site Investigation and Assessment (DSI)² was prepared to address the Secretary's Environmental Assessment Requirements (SEARs) and to support the SSD application for the Project. The DSI concluded that localised petroleum hydrocarbon impacts in surface and subsurface soils precluded the suitability of the Site for ongoing commercial and/or industrial land use and, therefore, suitable remedial works were required to support the development.

The following remedial objectives were proposed in the RAP (AECOM, 2021b):

- To remove localised petroleum impacted material;
- To characterise the suitability of underlying soils following excavation works; and
- To validate the Site's intended commercial/industrial land use.

This Validation Report and the remedial works documented in the RAP are limited to the vicinity of the location of an Intermediate Bulk Container (IBC) at the southern boundary of the Site, where petroleum hydrocarbon impacted soils were encountered. The impacted medium had an estimated area of 1 m x 0.5 m, to 0.5 m depth (approximate volume of 0.25 m³). The contaminants of potential concern (CoPC) are identified as Total Petroleum Hydrocarbons (TPH) / Total Recoverable Hydrocarbons (TRH).

² AECOM (2021a) Broken Hill Battery Energy Storage System Project Detailed Site Investigation & Assessment Report, dated 21 May 2021.

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1.3 Scope of Work

In order to achieve the objectives, the following validation activities were undertaken:

- Summary of site history including previous investigations;
- Summary of remedial works completed;
- Analytical results of soils within the walls and floor of excavation pit following the remedial works;
- Analytical results of imported fill material (for reinstatement of the excavation);
- Comparison of results against adopted soil Remedial Assessment Criteria (RAC);
- Summary of site updated Conceptual Site Model (CSM);
- Assessment of any identified data gaps;
- Summary soil classification, volume, and fate for offsite disposal of impacted material;
- Records of waste disposal from the Site;
- Summary of QA/QC compliance; and
- Documentation of this Validation Report.

1.4 Regulatory and Legislative Requirements

1.4.1 Development Approval

The Project is considered SSD under the *Environmental Planning and Assessment Act 1979* (EP&A Act), as such an Environmental Impact Statement (EIS) was prepared in accordance with the relevant provisions of the Act. The EIS was submitted to the Department of Planning, Industry and Environment (DPIE) on 21 May 2021 and subsequently approved by the Minister of Planning and Public Spaces on 8 September 2021.

This Validation Report is a requirement of the approved EIS and will be submitted to DPIE, to address consent Condition 30. The remedial works were carried out in accordance with the requirements of the RAP (AECOM, 2021b), being consent Condition 29 of the Development Application (DA).

1.4.2 Regulatory Requirements and Approvals

With respect to the State Environmental Planning Policy (SEPP) No. 55 – Remediation of Land, as undertaken, the remedial works were conducted to address clause 7 of the SEPP No. 55 for contamination and remediation to be considered in determining the DA to support the development of the BESS.

No further requirements are triggered under the SEPP 55 for the remedial works.

1.4.3 Relevant Policy and Guidelines

The following key legislation and guidelines are relevant to the works as conducted in accordance with the RAP (AECOM, 2021b):

- *Protection of the Environment Operations Act 1997* (POEO Act).
- POEO (Waste) Regulation 2014.
- *Contaminated Land Management Act 1997* (CLM Act).
- POEO (Clean Air) Regulation 2010.
- Work Health and Safety Regulation 2017 (WHS Regulation).
- *Work Health and Safety Act 2011* (WHS Act).
- National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended on 16 May 2013 (ASC NEPM).

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- CRC CARE, 2011. Health Screening Levels for petroleum hydrocarbons in soil and groundwater. CRC CARE, Technical report series No. 10. Friebel, E. and Nadebaum, P., 2011 (CRC CARE, 2011).
- NSW EPA 1995. Sampling Design Guidelines, September 1995 (NSW EPA, 1995).
- NSW EPA 2020. Contaminated Land Guidelines: Consultants reporting on contaminated land, May 2020 (NSW EPA, 2020).
- *Waste Avoidance and Resource Recovery Act 2001 No 58.*
- NSW EPA (2014) Waste Classification Guidelines Part 1: Classifying Waste (NSW EPA 2014).
- NSW EPA (2015) Technical Note: Light Non-Aqueous Phase Liquid Assessment and Remediation, August 2015.
- NSW DECCW (September 2010) – Vapour Intrusion: Technical Practice Note.
- *Environmental Planning and Assessment Act 1979 (EP&A Act).*
- State Environmental Planning Policy No. 55 - Remediation of Land (SEPP 55), Managing Land Contamination.

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2.0 Background

2.1 Site Identification

Table 1 Site Setting

Items	Details
Site Address	74 to 80 Pinnacles Place, Broken Hill NSW 2880
Title Identification (Lot & DP)	Lots 57 and 58 of DP 258288, Local Government Area (LGA) Broken Hill City Council, Parish of Picton, County of Yancowinna
Approximate Site Area	Approximately 7,900 m ² (six maps NSW Government)
Local Govt. Authority	Broken Hill City Council
Zoning of Site and Surrounding Area	The Broken Hill Local Environmental Plan (LEP) (2013) lists the zoning of the Site and surrounding area as follows: <ul style="list-style-type: none"> • The Site: IN1 – General Industry • North: SP2 – Infrastructure (rail infrastructure facility) • South: SP2 – Infrastructure (water supply system) • East: SP1 – Special activities (mining) • West: IN1 – General Industry
Current Site Use	The Site is an empty lot primarily used for storage of infrastructure, equipment, vehicles and other materials.
Adjacent Site Uses	<ul style="list-style-type: none"> • North: Commercial/industrial land use on Pinnacles Place followed by the Adelaide-Broken Hill Railway and associated access roads. Further north is a wastewater treatment facility which is visible to the north-west as well as the Broken Hill Community Recycling Centre which are both situated on Wills Street. • South: Commercial/industrial land use on Pinnacles Place including Mildura Broken Hill and Farwest Transport. Further south is Pinnacles Road followed by open space, including the ephemeral creek line running south-east. • East: Commercial/industrial land use on Pinnacles Place, Pinnacles Road and Kanandah Road and Kanandah Place including a service station and numerous transport/logistics and a sand mining premises. • West: Land subject to an undetermined Aboriginal land claim, an access road running north-south across the railway line and joining with Pinnacles Road. Further west is the TransGrid Broken Hill substation, followed by numerous large commercial/industrial premises, including Cristal Mining Australia Limited.
Nearby sensitive site uses	<ul style="list-style-type: none"> • The Site drains in a south-westerly direction towards an ephemeral drainage line about 60 m west (inferred to be down-gradient) • The ephemeral drainage line passes through a culvert under Pinnacles Road and joins Kelly's Creek, approximately 3.5 kilometres (km) south of the Site • The nearest residential receivers are located (>1.1 km) south (cross-gradient), east (up-gradient) and north-east (down-gradient) • Industrial and commercial properties are located adjacent to and surrounding the Site.

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The Site is rectangular in shape and is currently used as a storage area for disused equipment, vehicles and other materials. A Site inspection conducted by AECOM on 14 January 2021 indicated the presence of waste materials such as metal, wood and tyre waste, and infrastructure, including truck drop trailers. The Site was also used for storage of vehicle fuels and oils in IBCs, drums and jerry cans. Two stockpiles were visible on Site.

The vegetation on the Site is in a degraded and moderate to low condition with broad areas of bare sand present and, as such, there is very limited fauna habitat.

The Site is accessed from Pinnacles Place, via Pinnacles Road to the south.

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3.0 Environmental Site Status

3.1 Topography

The DSI report identified that the Site is relatively flat at approximately 290 m Australian Height Datum (m AHD), and a slight slope to the south, south-west.

Surface water drainage features are visible west of the Site, and drain in a southerly direction.

3.2 Geological Information

The DSI report indicated that the Site is located within the Precambrian aged Willyama Complex (AECOM, 2021a). South-east of the Site are three geological units in order of distance – amphibolite, sillimanite gneiss, adalusite-, chialstolite-, mica-, schist, phyllite, quartzite, sandstone, slate and granite gneiss. Soils within the Site and surrounding area are classified as Tenosol soil type – hilly with small valley plains, shallow dense loamy soils, shallow calcareous loam soils and shallow loams and sand occur on the hills.

During the DSI, the natural red-brown soil observed at surface at all borehole locations was classified as a clayey silt. The grainy texture was characteristic of silt material. It displayed low plasticity when moistened. The soil layer ranged in depth from 0.9 m below ground level (bgl) to 3.2 m bgl across the property (AECOM, 2021a).

Three of the boreholes were extended into the bedrock for installation of proposed groundwater wells. The bedrock encountered at these locations comprised a gneiss ranging from extremely weathered to high strength, with some layers of mica also encountered during drilling (AECOM, 2021a).

The DSI also indicated that the Site and immediate surrounds have an extremely low probability (1-5% chance) of Acid Sulfate Soil (ASS) and no naturally occurring asbestos or occurrences of mining subsidence on or within 500 m of the Site.

3.3 Hydrogeology

Review of the NSW Department of Primary Industries – Office of Water dataset as part of the DSI indicated that there are no registered groundwater bores located on-site and 13 registered groundwater bores within 1 km of the Site. Based on the information reviewed for registered bores, it was expected that there is potential for shallow groundwater to be present at the Site at less than 2 m bgl (AECOM, 2021a).

During the DSI conducted, there were no observations of moisture in the soil and bedrock at any boreholes to depth. Groundwater was not encountered in the investigation. The deeper boreholes (BH001, BH005, BH006) were terminated as the depth exceeded the depths proposed for construction works. BH005 was the deepest borehole and terminated at 8.0 m bgl (AECOM, 2021a).

It does not appear that groundwater is beneficially used within 1 km of the Site, with the exception of the aquaculture bore located 928 m east (inferred hydraulically cross-gradient to the Site) (AECOM, 2021a). It is also noted that there is potential that groundwater is dewatered at the Perilya mine which traverses beneath the Site (AECOM, 2021a).

3.4 Previous Site Investigations

The relevant previous investigations undertaken at the Site is the AECOM (2021a) DSI, as summarised below.

- The objective of the investigation was to identify and document contaminants of potential concern (CoPC) (heavy metals (arsenic [As], copper [Cu], cadmium [Cd], chromium [Cr], lead [Pb], nickel [Ni], mercury [Hg], zinc [Zn]), TRH and TPH, benzene, toluene, ethylbenzene, xylenes and naphthalene (BTEXN), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and asbestos to inform future development works at the Site and evaluate if there is a requirement for further assessment and/or management.

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- The scope of works comprised:
 - A desktop review of available background/historical information and development of a preliminary CSM.
 - A contamination investigation which involved drilling at six borehole locations and sub surface sampling at 'Tank' locations where staining and odours were observed (shown on **Figure F3, Appendix A**). Soil samples were collected and analysed for CoPC. Analytical results were compared to the adopted soil assessment criteria for commercial/industrial land use.
 - Following assessment of the soil analytical results, the CSM was updated based on the findings to assess potential risk to human health and ecological receptors in a commercial/industrial setting.
- The findings of the DSI were as follows:
 - The desktop review identified that the Site had been vacant until sometime between 2005 and 2010, from which time the Site was used for storage of various pieces of equipment and building materials.
 - The contamination investigation and assessment of the soil analytical data identified localised petroleum hydrocarbon impacts as follows:
 - Surface soils (0.0-0.1 m bgs_ - TRH C10-C16 concentration (1,240 mg/kg) exceeded the HSL D for vapour intrusion 0-1 m (137 mg/kg), the ESL (170 mg/kg) and the management limit (1000 mg/kg); TRH C16-C34 concentration (63,600 mg/kg) exceeded the CRC Care HSL for direct contact (27,000 mg/kg), the ESL (2,500 mg/kg) and the management limit (5,000 mg/kg); and TRH C34-C40 concentration (12,500 mg/kg) exceeded the ESL (6,600 mg/kg) and the management limit (10,000 mg/kg); and
 - Subsurface soils (0.32 – 0.4 m bgs - TRH C10-C16 concentration (360 mg/kg) exceeded the HSL D for vapour intrusion 0-1 m (137 mg/kg); and TRH C16-C34 concentration (5,900 mg/kg) exceeded the ESL (2,500 mg/kg) and the management limit (5,000 mg/kg)

The petroleum hydrocarbon impacts in surface and subsurface soils in the southern portion of the Site preclude the suitability of the Site for commercial/industrial land use; however, the Site could be made suitable following remedial works. No groundwater was encountered during the contamination investigation to a maximum depth of 8 m bgl.

 - Based on the updated CSM, there are complete pathways from direct contact with petroleum hydrocarbon impacted surface soils by on-site commercial and intrusive maintenance workers and ecological receptors within the vicinity of the 'Tank' sample location in the southern part of the Site.
 - There is also potential for leaching of soil contaminants to surface water during heavy rainfall and offsite migration by overland flow to the ephemeral creek east of the Site. However, it is considered that total recoverable hydrocarbons (TRH) would volatilise and degrade over this distance and is, therefore, unlikely to present a risk to offsite human health and ecological receptors.

3.5 Updated Conceptual Site Model (CSM) - Exposure Assessment

A CSM is a qualitative description of the mechanisms by which potential and/or complete exposure pathways exist between known or potential sources of site impacts, and human or environmental receptors. Where an exposure pathway between a source and a receptor is incomplete, exposure to the contaminants via that pathway cannot occur. If the exposure pathway is potentially complete, this is due to lack of data or there is the potential for conditions to change for the source, the pathway, or the receptor in the future which would make the exposure pathway complete.

A CSM was developed as part of the DSI. The identified linkages between source-pathways-receptors (SPR) are provided in **Table 2**.

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Table 2 Updated Conceptual Site Model

Receptors	Complete or Potentially Complete Linkages
Onsite Human Health Construction workers – contractors and employees	<p>Soil: Yes, complete linkage</p> <ul style="list-style-type: none"> Exceedances of the health screening levels (HSL) for direct contact and the management limits for TRH in the vicinity of sample location 'Tank' at 0.0-0.1 and 0.2-0.3 m bgl. <p><i>Soil Vapour: No, incomplete linkage based on there being no buildings currently on Site. The Site should be remediated prior to development and construction of the Site office building.</i></p> <ul style="list-style-type: none"> Exceedances of the HSL D vapour intrusion sand 0-1 m in the vicinity of sample location 'Tank' all samples collected to 0.4 m bgl; however, depth of impact not delineated. As noted in CRC CARE "As vapour intrusion HSLs are not presented for TPH C16-C34 and TPH C34-C40 the soil HSLs for direct contact are the relevant HSLs. <p><i>Groundwater: No, incomplete linkage</i></p> <ul style="list-style-type: none"> Groundwater was not encountered beneath the Site to a maximum depth of 8 m bgl, therefore any migration pathway via groundwater is incomplete.
Offsite Human Health Disturbance maintenance workers excavating adjacent ground	<p><i>No, incomplete</i></p> <ul style="list-style-type: none"> Groundwater was not encountered beneath the Site to a maximum depth of 8 m bgl, therefore any migration pathway via groundwater is incomplete. There is potential for leaching of soil contaminants to surface water during heavy rainfall and offsite migration by overland flow to the ephemeral creek east of the Site. It is considered that TRH from localised impacts would volatilise and degrade over this distance and is therefore unlikely to present a risk to offsite human health and ecological receptors.
On-site Ecological Terrestrial soil environments	<p>Yes, complete based on current data set</p> <ul style="list-style-type: none"> Exceedances for ASC NEPM (NEPC, 2013) ESLs for TRH in the vicinity of sample location 'Tank' at a maximum depth of 0.4 m bgl; however, depth of impact not delineated.
Offsite Ecological Ephemeral creek to east of the Site	<p><i>No, incomplete</i></p> <ul style="list-style-type: none"> There is potential for leaching of soil contaminants to surface water during heavy rainfall and offsite migration by overland flow to the ephemeral creek east of the Site. It is considered that TRH from localised impacts would volatilise and degrade over this distance and is therefore unlikely to present a risk to offsite human health and ecological receptors.

*Source: AECOM, 2021a

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4.0 Assessment Criteria

The primary reference for environmental site assessment in Australia is the amended National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPC, 2013). This document includes criteria for use in evaluating potential risk to human health and ecosystems from chemical impacts, which are presented as generic investigation levels and screening levels appropriate to a Tier 1 risk-based assessment applicable to the first stage of site assessment. The application of these investigation levels and screening levels is subject to a range of limitations, and their selection and use must be in the context of a CSM relating to the nature and distribution of impacts and potential exposure pathways. The adopted assessment criteria for this validation assessment are based on the potential receptors identified in Table 2 and summarised as below.

4.1 Soil

Table 3 below summarises the soil assessment criteria adopted based on the proposed remediation works documented in the RAP (AECOM, 2021b). In most instances the Tier 1 screening criteria is not designed to be remediation criteria. An exceedance of a criterion would trigger further consideration of the site-specific circumstances, and not necessarily indicate that additional large-scale remediation is required.

Table 3 Soil Assessment Criteria

Adopted Screening Level	Rationale and Selection
Human Health Assessment Criteria	
Health Investigation Levels (HILs), ASC NEPM (NEPC, 2013)	<p>The ASC NEPM HILs provide a framework for the use of investigation and screening levels. The framework is applicable for assessing human health risk via all relevant pathways of exposure and covers a broad range of metals and organic substances.</p> <p>The current and proposed Site use is commercial/industrial.</p> <p>HILs adopted: HIL D – commercial/industrial.</p>
Aesthetics Amended ASC NEPM (NEPC, 2013)	<p>In accordance with Schedule B1 of the ASC NEPM, the beneficial use of land referred to as “aesthetics” may be precluded where land is considered offensive to the senses – e.g. through the presence of offensive odour or unusually coloured staining.</p>
Management Limits ASC NEPM (NEPC, 2013)	<p>There are Management Limits for specific soil types (coarse and fine) and land uses in the ASC NEPM. The Management Limits avoid or minimise the potential effects of the following and require consideration of site-specific factors to determine the maximum depth to which the limits should apply:</p> <ul style="list-style-type: none"> • Formation of observable light non-aqueous phase liquid (LNAPL). • Fire and explosive hazards. • Effects on buried infrastructure e.g. penetration of, or damage to, inground services by hydrocarbons. <p>The criteria presented in this guideline are considered relevant for the upper two metres of soil.</p> <p>Management Limits adopted: TRH fractions F1-F4 in soil (mg/kg) commercial/industrial, Coarse Soil (most conservative value adopted).</p>

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Adopted Screening Level	Rationale and Selection
HSLs, ASC NEPM (NEPC, 2013)	<p>The ASC NEPM presents HSLs for petroleum compounds which have been derived through consideration of risks to human health, with the main focus being on the vapour exposure pathway. The HSLs have been calculated using parameters that generally correspond to data available and as such aim to provide levels that are realistic rather than overly conservative. Full detail on their derivation and their application is provided in CRC CARE Technical Report No.10 - Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater. September 2011. (Friebel, E. and Nadebaum, P., 2011).</p> <p>HSLs adopted: Vapour Intrusion: HSL D – commercial/industrial (Soil texture ‘sand’ was used for 0 to < 1m and non-petroleum criteria). A site office is currently proposed for the Site; however, there are currently no buildings on Site. As noted in CRC CARE Technical Report No. 10 “As vapour intrusion HSLs are not presented for TPH C16-C34 and TPH C34-C40 the soil HSLs for direct contact are the relevant HSLs”</p>
Intrusive Maintenance Worker (Shallow Trench) Health Screening Levels, CRC CARE Technical Report No. 10, Part 2	<p>The CRC Care (CRC Care, 2011) presents the HSLs for vapour intrusion of petroleum compounds relevant to intrusive maintenance workers (shallow trench). Health screening levels for intrusive maintenance workers is adopted for potential future disturbance work into shallow fill (sand) on-site.</p> <p>HSLs adopted: Applicable to 0 m to <2 m depth. ‘Sand’ soil texture was used.</p>
Health Screening Levels for Direct Contact, CRC CARE Technical Report No. 10, Part 2 (Friebel, E. and Nadebaum, P., 2011)	<p>The CRC CARE (Friebel, E. and Nadebaum, P., 2011) presents the HSLs for direct contact of petroleum compounds.</p> <p>HSLs adopted: Disturbance maintenance worker</p>
Ecological Assessment Criteria	
Ecological Investigation Levels (EILs) ASC NEPM (NEPC, 2013)	<p>The ASC NEPM requires consideration of EILs and Ecological Screening Levels (ESLs), principally in the top 2 m of soil which corresponds to the root zone and habitation zone of many species. Therefore, only soil results from the upper 2 m would be screened against ecological criteria.</p> <p>EILs adopted:</p> <ul style="list-style-type: none"> • Table 1B (1) Soil-specific added contaminant limits for aged zinc, aged copper and aged nickel in soil with sample specific pH and CEC. • Table 1B (3) Soil-specific added contaminant limits for aged chromium III in soil with a clay content specific to each sample based on the bore logs. • Table 1B (4) Generic added contaminant limits for lead in soils irrespective of their physicochemical properties. • Table 1B (5) Generic EILs for aged arsenic and fresh naphthalene in soils irrespective of their physicochemical properties.

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Adopted Screening Level	Rationale and Selection
ESLs, ASC NEPM (NEPC, 2013)	<p>The ASC NEPM ESLs were developed to be protective of environmental concerns by determining the reasonable maximum exposure from site sources for a range of petroleum hydrocarbon compounds and TRH fractions commonly encountered on contaminated sites and are applicable for assessing risk to terrestrial ecosystems. ESLs broadly apply to coarse- and fine-grained soils and various land uses. They are generally applicable to the top 2 m of soil and 3 m in arid regions.</p> <p><u>ESLs adopted:</u> Commercial and industrial, applicable to 0 m to <2 m depth based on existing land use. 'Fine' soil texture was used.</p>

4.2 Groundwater

Groundwater was not assessed as part of the DSI. Additionally, a groundwater assessment was not included in the RAP, as groundwater was not encountered during intrusive works to a maximum depth of 8 m bgl.

No groundwater monitoring wells were installed on the Site, and impacts to groundwater as a result of the localised petroleum impacted soils are considered negligible.

4.3 Waste Classification

To characterise soil conditions at the Site for offsite disposal to a licensed landfill, soil analytical results, including toxicity characteristic leaching procedure (TCLP) analytical results from the DSI report were compared to the following:

- NSW EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste.
- NSW EPA (2014) Waste Classification Guidelines, Part 4: Acid Sulfate Soils.

4.4 Import Material Criteria

Imported materials were only accepted to the Site if they do not represent an environmental or human health risk and meet the definition of:

- Virgin Excavated Natural Material (VENM) as defined in the *Protection of the Environment Operations Act 1997* Schedule 1.
- Resource Recovery Order under Part 9, Clause 93 of the POEO (Waste) Regulation 2014 – The excavated natural material order 2014.
- Any other suitable engineered, quarried, or other material granted an application EPA Exemption under the Protection of the Environment Operations (Waste) Regulation 2014.

All materials imported onto the Site were required to be accompanied by appropriate documentation that has been verified by a duly qualified consultant. Imported material receipts and documentation are included as **Appendix F**.

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5.0 Data Quality Objectives (DQOs)

To ensure that data of adequate type and reliability were collected and assessed for validation purposes, the seven-step Data Quality Objective (DQO) approach, endorsed in the NSW EPA Guidelines for the NSW Site Auditor Scheme 3rd Edition (2017), was adopted. The DQOs have set quality assurance and quality control parameters for the field and laboratory programs to ensure data of appropriate reliability have been used to assess the environmental condition of the Site.

As stated in Appendix B, Schedule B2 Guidelines on Site Characterisation of the ASC NEPM (NEPC, 2013), the Data Quality Objectives (DQO) process is used to “*define the type, quantity, and quality of data needed to support decisions relating to the environmental condition of a site*”. The seven-step DQO process adopted for the Remedial Works is outlined in **Table 4**.

Table 4 Data Quality Objectives

DQO Step	Details of DQO Process
<p>1. State the Problem</p>	<p>The Site is impacted by localised petroleum hydrocarbons in surface and subsurface soils.</p> <p>As per Condition 29 of the approved EIS in support of the SSD, prior to carrying out any development, the Applicant must develop and implement a Remedial Action Plan prepared in accordance with the relevant guidelines produced or approved under the <i>Contaminated Land Management Act 1997</i>. Remediation works must be undertaken by a suitably qualified and experienced consultant (s).</p> <p>As per Condition 30 of the approved EIS in support of the SSD, within one month of the completion of the remediation works, the Applicant must submit a copy of a validation report/letter to the Planning Secretary, which has been prepared, or reviewed and approved, by a consultant certified under the Environment Institute of Australia and New Zealand Certified Environmental Practitioner (Site Contamination) Scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme.</p> <p>A validation report (this report) is required to characterise the suitability of underlying soils for the Site’s intended commercial/industrial land use.</p>
<p>2. Decision Identification</p>	<p>The decisions to meet the RAP, are as follows:</p> <ul style="list-style-type: none"> • Have impacted soil materials been removed and the areas validated before backfilling with new fill materials? • Have excavated materials been adequately characterised accordingly? • Have excavated materials been adequately disposed of accordingly? • Has imported fill been verified as suitable for the proposed land use? • Has the impacted area been adequately reinstated with suitable backfill materials?
<p>3. Decision Inputs</p>	<p>The primary inputs required include:</p> <ul style="list-style-type: none"> • Field results and observations; • Site lithology; • Site physical constraints; • Laboratory results; • Assessment of the suitability of the data through the assessment of data quality indicators (DQIs), namely precision, accuracy, representativeness, completeness and comparability (PARCC) parameters; and • Historical reports and other information sources available to AECOM as referenced throughout this Validation Report.

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DQO Step	Details of DQO Process
4. Study Boundaries	<p>Lateral: The lateral and vertical boundary of the remediation area is limited to the excavation area defined within the RAP (AECOM, 2021b) and displayed in Figure F3, Appendix A.</p> <p>Temporal: Data collected during the DSI and remedial works conducted between January to December 2021.</p>
5. Decision Rule	<p>The decision rules for the validation sampling are:</p> <p>Data Reliability</p> <ul style="list-style-type: none"> • If it is determined that the data generated during validation sampling are reliable and suitably characterises contamination, it will be compared against the adopted remediation criteria. • If it is determined that the data generated through during validation sampling are not reliable and/or do not suitably characterise contamination as required, then further investigations may be required prior to comparison to the adopted remediation criteria. <p>Potential Risk to Receptors</p> <ul style="list-style-type: none"> • If the contaminant concentrations were less than the adopted remediation criteria, then any potential risk will be assumed to be low and acceptable. If concentrations are equal to or greater than the remediation criteria, then a qualitative Tier 1 risk assessment will be undertaken to further assess any potential risk.
6. Decision Error Limitation	<p>There are two types of data error:</p> <ul style="list-style-type: none"> • False negative data conclusion, which suggests that a contaminant is not present above threshold concentrations when it actually is; and • False positive data conclusion, which suggests that a contaminant is present above threshold concentrations, but it actually is not. <p>These errors occur in:</p> <ul style="list-style-type: none"> • Field sampling which occur when samples collected are not representative of the conditions within the investigation area; and • Laboratory measurement, which occur during sampling handling, preparation, analysis and data reduction. <p>An assessment was made as to the likelihood of a decision error being made based on the results of a quality assurance and quality control (QA/QC) assessment and the closeness of the data to RAC. A decision on the acceptance of the analytical data was made on the basis of the data quality indicators (DQI) in the context of the PARCC parameters as follows:</p> <ul style="list-style-type: none"> • Precision: A quantitative measure of the variability (or reproducibility) of data; • Accuracy: A quantitative measure of the closeness of reported data to the “true” value; • Representativeness: The confidence (expressed qualitatively) that data are representative of each media present on-Site; • Completeness: A measure of the amount of useable data from a data collection activity; and • Comparability: The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event. <p>The specific DQIs are detailed in Section 6.0. Specific limits for this project are in accordance with the appropriate guidance in ASC NEPM (NEPC, 2013), appropriate indicators of data quality, and standard procedures for field sampling and handling. The step also examines the certainty of conclusive statements based on the available site data collected.</p>

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DQO Step	Details of DQO Process
7. Design Optimisation	<p>Based on the previous Steps 1 to 6 of the DQO process, the design (i.e. scope of works or sample and analysis quality plan) for obtaining the required data (i.e. proposed field and laboratory programs for characterisation/validation) is presented in Section 6.0 and below:</p> <ul style="list-style-type: none">• Remedial design based around the required excavation area and validation; and• That the above DQOs are met.

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6.0 Quality Assurance / Quality Control

A quality assurance/quality control (QA/QC) program has been developed to ensure that data collected are sufficiently accurate, precise, and reproducible to be used for the validation works. All stages of the remedial works (i.e. data gathering, sample handling, laboratory analysis) will be conducted in accordance with the QA/QC program outlined in the following sections.

The objective of the QA/QC program is to provide an assessment of the reliability of the data presented for interpretation for the project in terms of DQO's required for the Project.

The project data quality indicators (DQIs) have been established to set acceptance limits on field and laboratory data collected as part of the remediation programme. For both field and laboratory procedures acceptance limits are set at different levels for different projects and by the laboratories. The DQIs for the validation sampling are presented in **Table 5**.

Table 5 Summary of Data Quality Indicators

DQI	Field	Laboratory	Acceptability Limits
Completeness	<ul style="list-style-type: none"> All critical locations sampled All samples collected using Standard Operating Procedures (SOPs) appropriate and complied with an experienced sampler Documentation check for accuracy 	<ul style="list-style-type: none"> All critical samples analysed for all CoPC Appropriate methods implemented Appropriate Laboratory limits of reporting Sample documentation complete Sample holding times complied 	<ul style="list-style-type: none"> As per ASC NEPM (NEPC, 2013) < nominated assessment criteria
Comparability	<ul style="list-style-type: none"> Sample SOPs used on each occasion Experienced sampler Climatic conditions 	<ul style="list-style-type: none"> Same analytical methods used (including clean-up) Sample limit of reporting (LORs) (justify/quantify if different) Same laboratories (NATA accredited) Consistent reported units of measurement 	<ul style="list-style-type: none"> As per ASC NEPM (NEPC, 2013) < nominated assessment criteria
Representativeness	Appropriate media sampled (soil groundwater and vapour)	All critical samples analysed for all CoPC as required for the project objectives.	Appropriately selected samples analysed
Precision	<ul style="list-style-type: none"> SOPs appropriate and complied with Collection of blind and split duplicate samples 	Analysis of: <ul style="list-style-type: none"> Intra-laboratory duplicate samples (1 in 20 samples) Inter-laboratory duplicate samples (1 in 20 samples) Laboratory duplicate sample 	<ul style="list-style-type: none"> RPD of < 30% RPD of < 30% RPD of < 30%

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DQI	Field	Laboratory	Acceptability Limits
Accuracy	<ul style="list-style-type: none"> SOPs appropriate and complied with Collection of rinsate blanks at a rate of one per batch of samples. Trip spikes to be sampled at a rate of one per batch of samples. 	Analysis of: <ul style="list-style-type: none"> Field/trip blanks (1/day) Method blanks Matrix spikes Matrix spike duplicates Surrogate spikes Laboratory control samples Laboratory prepared spikes Reagent blank 	<ul style="list-style-type: none"> Non-detect for CoPC Non-detect for CoPC 70 to 130% RPD of <30% 70 to 130% 70 to 130 % 70 to 130% Non-detect for CoPC

The overall reliability of the analytical data was assessed against the DQIs as required by NSW EPA (2020). Analytical data that fail to meet the predetermined data quality objectives and acceptable limits of accuracy and precision are to be managed using the following corrective actions on a case-by-case basis:

- Reanalyse suspect samples, provided sample or extract is within holding time;
- Evaluate and amend sampling and/or analytical procedures;
- Accept the data as an estimate with an acknowledged level of bias and imprecision; and
- Discard the data and re-sample and re-analysis.

In the event that data of questionable reliability are used, restrictions and limitations associated with the use of such data should be clearly identified. Failure to meet the DQOs are to be reported and the significance of the outcome of the validation program are to be addressed. Results of this QA/QC evaluation are provided in **Section 7.6**.

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7.0 Implementation of Remediation Action Plan

7.1 Summary of the RAP (AECOM, 2021b)

The objective of the RAP was to present a plan of the anticipated remedial works for the removal and validation of localised petroleum hydrocarbon impacted soils to address consent Condition 29 of the approved EIS.

The remedial approach considered management of known petroleum hydrocarbon localised soil contamination at the Site. The works were to include the following:

- Removal of IBC at the southern boundary of the Site (AECOM sample location 'Tank') (refer to **Figure F3, Appendix A**);
- Excavation and removal of stained, odorous and petroleum hydrocarbon impacted soils in the vicinity of the IBC, that covers an approximate area of 1 m x 0.5 m, to 0.5 m (approximate volume of 0.25 m³). The DSI identified samples based on the contaminant concentration at this location to be classified as Hazardous Waste (HW) and Restricted Solid Waste (RSW) in accordance with the NSW EPA waste guidelines. Given the limited nature of the excavation area expected, excavated material was to be disposed offsite to a licensed landfill facility as Hazardous Waste to avoid the need for stockpiling and re-sampling of the material on-site;
- Validation sampling of walls and floor of the excavation pit for the contaminants being TRH/TPH; and
- Reinstatement of the excavation area with imported materials.

The RAP included contingencies in the event of the following:

- If groundwater was encountered during the remedial works;
- Additional hazardous waste encountered;
- Excessive vapours emanating from the excavated soil or excavation pit;
- Grossly impacted soils encountered; and/or
- Contamination found in areas not previously identified.

7.2 Validation Sampling Methodology

In order to address the objectives outlined in **Section 1.1**, the field methods were carried out in accordance with AECOM standard operating procedures for each task that comprised the fieldwork program and in accordance with Section 7.0 of the RAP (AECOM, 2021b).

Table 6 Soil Investigation Methodology

Activity/Item	Details
Soil Sampling	Wall and Floor Validation Samples All validation samples from the wall and floor of the excavation were collected using a decontaminated stainless steel trowel to collect material from the walls and floor of the excavation pit.
Field Screening	Soil samples were screened in the field for volatile organic compounds (VOCs) using a calibrated photo ionisation detector (PID) equipped with a 10.6 eV lamp. The PID calibration certificate is provided in Appendix H .
Rate / Frequency	Soil validation samples were collected within the excavation at a rate of one sample from each wall (four samples) and one sample from the floor (one sample); five samples in total.

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Activity/Item	Details
QAQC Samples	<ul style="list-style-type: none"> Rinsate: collected for each day of field sampling works (one in total) Intra-laboratory duplicate: collected at a rate of 1:20 primary samples (one in total)
Soil Logging	<p>Soils were sampled and classified in accordance with the Unified Soil Classification System (USCS) Procedure for Determining Unified Soil Classification (Visual Method), United States Department of the Interior, Bureau of Reclamation (USBR) 5005-86, including observation of any anthropogenic material (e.g. asbestos cement (AC) sheeting) or olfactory evidence of contamination if observed.</p> <p>The field notes are presented in Appendix C.</p>
Decontamination	<p>The decontamination procedures were performed before initial use of re-useable equipment and after each subsequent use (e.g. the use of a trowel). A new pair of disposable nitrile sampling gloves was used to collect each sample. Where hand tools were utilised, decontamination between each sample with a Decon90/water solution was completed.</p> <p>Soil samples were placed directly into laboratory prepared glass jars with Teflon-lined lids for analysis.</p> <p>A rinsate blank was completed by running laboratory prepared deionised water over the decontaminated stainless steel trowel directly into laboratory prepared sampling containers for analysis.</p>
Sample Preservation	<p>Soil samples were placed into insulated rigid storage containers chilled with ice. No preservatives were required to be used in the laboratory supplied sampling jars.</p>

7.3 Summary of Remediation Works

The remedial works were conducted on 8 December 2021, and comprised the following:

- Supervision of the excavation of impacted material to ensure that all impacted material had been removed. The extent of the excavation was approximately 2 m x 2 m, to 1 m depth, amounting to approximately 4 m³;
- Excavation and removal of the localised petroleum impacted materials by Solcon Trading Pty Ltd (Solcon) to an offsite landfill facility licensed for Hazardous Waste;
- Validation sampling and analysis of remaining soils within the excavation pit for CoPC, including TPH/TRH; and
- Placement and reinstatement of imported materials sourced by Solcon into the excavation pit.

7.3.1 Impacted Material Removal

A total of 4.56 tonnes of hydrocarbon impacted material was removed from the excavation and disposed offsite to a licensed facility by Solcon. The impacted material was disposed off at Integrated Waste Services (IWS) – Dublin located at Port Wakefield Road, Lower Light, South Australia (SA), who are licensed for receipt of Hazardous Waste.

The waste disposal docket is provided in **Appendix G**. The waste classification report for the material taken offsite is included in **Appendix G**.

7.3.2 Import Materials for Reinstatement

The RAP required reinstatement of the excavation pit with imported materials comprised of quarried material, excavated natural material (ENM) or VENM.

9.38 tonnes of “Cracker Dust” (screened blue stone fines) (quarried material) was imported from Mawsons Quarry - Broken Hill Quarry to Site by Solcon Trading Pty Ltd for the purpose of backfilling the excavated materials. Import material documentation is provided in **Appendix F**.

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AECOM sampled the material as no analytical results were available from the provider, Mawsons Concrete & Quarries. Samples were analysed for a range of potential contaminants including heavy metals, TPH/TRH, BTEXN, PAHs, PCBs and asbestos, as the material was sourced from a quarry. Results of analysis are provided in **Table T1 and T2, Appendix B**. The analytical results identified this material has concentrations of contaminants either less than the laboratory LOR or the adopted criteria for ongoing commercial/industrial land use.

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7.4 Field Observations

7.4.1 Impacted Area Details and Condition

Validation sampling was undertaken on 8 December 2021. It is understood that the IBC at the southern boundary of the Site, the base of which where petroleum hydrocarbon impacted soils were identified, had been removed the day prior. The impacted surface appeared black in colour with hydrocarbon odours emanating from the soils.

Impacted soils were confined to the location identified in the RAP and **Section 1.2**. No other impacted areas were noted during the remedial works and validation assessment.

7.4.2 Geology Encountered

Field notes and observations indicated that the geology encountered within the excavation was silty sand, reddish-brown in colour, fine, dry and loose. Trace sub-angular gravels (~2-10 mm) were encountered, and no visual or odorous materials were encountered.

7.4.3 Groundwater

No groundwater was observed to be seeping into the excavation during the removal of impacted materials. As noted in **Section 4.2**, groundwater was not encountered during the DSI works, which extended to a maximum depth of 8 m bgl.

7.4.4 PID Readings and Sampling

Higher PID readings generally corresponded with soil hydrocarbon odours. Based on the CRC Care Technical Report No. 23 (CRC Care, 2013), field PID measurements from a soil sample headspace of >500 parts per million (ppm) is indicative of the presence of nearby LNAPL.

Reported PID readings from the headspace within sample containers collected for validation samples were between 0.0 ppm and 0.2 ppm, indicating that the likelihood of LNAPL or petroleum hydrocarbon presence within validation samples was low.

7.4.5 Imported Material

As stated in **Section 7.3.2**, imported quarried materials were brought to site by Solcon and used to backfill the excavation pit. Analysis of import materials was undertaken for a suite of potential contaminants, including heavy metals (As, Cd, Cr, Cu, Pb, Ni, Zn and Hg), TPH/TRH, BTEXN, PAHs, PCBs and asbestos, as the material was sourced from Broken Hill Quarry. Results of the analysis are provided in **Table T1 and T2, Appendix B** and indicate the concentrations of contaminants were reported either less than the laboratory LOR or the adopted criteria for ongoing commercial/industrial land use.

7.5 Soil Analytical Results

Five validation samples were collected from the floor (1) and walls (4) of the excavation after the petroleum hydrocarbon impacted materials were removed. This section summarises the analytical results for the validation works completed on-site.

Validation sample locations are shown in **Figure F4, Appendix A**. The soil analytical results per assessment criteria (human health and ecological) are provided in **Tables T1 and T2, Appendix B** respectively. Laboratory reports are provided in **Appendix C**.

The analytical results for the validation samples indicate that the concentrations of contaminants were less than the laboratory LOR and the adopted criteria for ongoing commercial/industrial land use.

7.6 Quality Assurance / Quality Control

Results for the QA/QC sample (intra-laboratory field duplicate) are summarised in **Tables T1 and T2, Appendix B**. Data validation (including soil analytical, intra-laboratory field duplicate and rinsate results) is provided in **Appendix E**. Laboratory reports are provided in **Appendix C**. On the basis of the data validation, the overall quality of the analytical results is considered acceptable for interpretive use.

DRAFT**7.6.1 Soil Validation Sampling**

Comparison of in-situ soil analytical results to RAC is provided in **Table T2, Appendix B** and is summarised in **Table 7** below.

Table 7 Validation Analytical Summary

No. of Primary Characterisation Samples Analysed	Analyte	Min Conc. (mg/kg)	Max Conc. (mg/kg)	Comments
5	TPH/TRH Fractions			
	C ₆ -C ₁₀ Fraction (minus BTEX)	<10	<10	Results less than adopted criteria.
	>C ₁₀ -C ₁₆ Fraction (minus Naphthalene)	<50	<50	Results less than adopted criteria.
	C ₆ -C ₁₀ Fraction	<10	<10	Results less than adopted criteria.
	>C ₁₀ -C ₁₆ Fraction	<50	<50	Results less than adopted criteria.
	>C ₁₆ -C ₃₄ Fraction	<100	<100	Results less than adopted criteria.
	>C ₃₄ -C ₄₀ Fraction	<100	<100	Results less than adopted criteria.
5	BTEXN			
	Benzene	<0.2	<0.2	Results less than adopted criteria.
	Toluene	<0.5	<0.5	Results less than adopted criteria.
	Ethylbenzene	<0.5	<0.5	Results less than adopted criteria.
	Xylenes	<0.5	<0.5	Results less than adopted criteria.
	Naphthalene	<1	<1	Results less than adopted criteria.

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8.0 Conclusions

AECOM was commissioned by AGL to prepare a Validation Report for the remediation of localised petroleum hydrocarbon impacted material at 74-80 Pinnacles Place, Broken Hill NSW 2880 (Lots 57 and 58 of DP 258288) (the Site). These works were conducted during December 2021 in accordance with the *Remedial Action Plan (RAP) - Localised Petroleum Impacted Soils* (AECOM, 2021b) prepared for the Site.

This Validation Report and the remedial works documented in the RAP (AECOM, 2021b) are limited to the vicinity of an IBC at the southern boundary of the Site, where petroleum hydrocarbon impacted soils were encountered during the DSI. The impacted soils covered an estimated area of 1 m x 0.5 m, to 0.5 m depth (approximate volume of 0.25 m³) and the CoPC were identified as TPH/TRH. To ensure all impacted materials were removed, the extent of the excavation was approximately 2 m x 2 m, to 1 m depth, amounting to approximately 4 m³.

The remedial works conducted on 8 December 2021 comprised the following:

- Excavation and removal of the localised petroleum impacted materials by Solcon to an offsite landfill facility licensed for Hazardous Waste;
- Validation sampling and analysis of remaining soils within the excavation pit for CoPC including TPH/TRH; and
- Placement and reinstatement of imported materials sourced by Solcon into the excavation pit.

Validation samples were collected from the walls and floor of the excavation pit following the removal of impacted materials. Sampling and analysis of the underlying soils within the excavation indicated that concentrations of CoPC were less than the laboratory LOR and indicate that all impacted material has been removed from the excavation.

Waste disposal dockets from the landfill facility, indicate that the material has been disposed at IWS – Dublin located at Port Wakefield Road, Lower Light, SA, which is a landfill licensed for receipt of Hazardous Waste..

Validation sampling of the imported quarried materials (identified as “Cracker Dust”/screened blue stone fines) was undertaken prior to backfilling of the excavation. The quarried materials were analysed for potential contaminants, including heavy metals, TPH/TRH, BTEXN, PAHs, PCBs and asbestos. Analysis of the sample indicated concentrations of contaminants either below the laboratory LOR or the adopted criteria for ongoing commercial/industrial land use and suitable to be used for reinstatement.

Based on the remediation and validation works completed on the Site, it is considered that:

- The objectives of the RAP (AECOM, 2021b) pertaining to the removal of localised petroleum hydrocarbon impacted material and validation of the excavation area has been achieved, addressing Condition 29 of the approved EIS;
- Validation Report has been reviewed by a consultant certified under the CEnvP(SC) Scheme, addressing Condition 30 of the approved EIS; and
- The Site is considered suitable for the proposed ongoing commercial/industrial land use for the development and operation of the BESS.

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9.0 References

AECOM, 2021a. Broken Hill Battery Energy Storage System Project Detailed Site Investigation & Assessment Report, dated 21 May 2021

AECOM, 2021b. Remedial Action Plan – Localised Petroleum Hydrocarbon Impacted Soils - Broken Hill Battery Energy Storage System Project, dated 03 December 2021

CRC CARE, 2011. Health Screening Levels for petroleum hydrocarbons in soil and groundwater. CRC CARE, Technical report series No. 10. Friebel, E. and Nadebaum, P., 2011 (CRC CARE, 2011).

National Environment Protection Council, 1999. National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended on 16 May 2013 (ASC NEPM, 2013).

NSW DECCW, 2010. Vapour Intrusion: Technical Practice Note, dated September 2010.

NSW EPA 1995. Sampling Design Guidelines, September 1995 (NSW EPA, 1995).

NSW EPA, 2020. Guidelines for Consultants Reporting on Contaminated Sites, dated 2020.

NSW EPA, 2014. Waste Classification Guidelines Part 1: Classifying waste, dated November 2014

NSW EPA 2020. Contaminated Land Guidelines: Consultants reporting on contaminated land, May 2020 (NSW EPA, 2020).

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NSW EPA, 2015. Technical Note: Light Non-Aqueous Phase Liquid Assessment and Remediation, August 2015.

NSW EPA, 2017. Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd Edition).

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10.0 Limitations

AECOM Australia Pty Limited (AECOM) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of AGL Energy Services Pty Ltd (AGL) and only those third parties who have been authorised in writing by AECOM to rely on this Report.

It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this Report.

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It is the responsibility of third parties to independently make inquiries or seek advice in relation to their particular requirements and proposed use of the site.

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Appendix A

Figures



Legend

- ✖ Project location
- Broken Hill City Council
- Main road
- Local road
- Railway
- Watercourse
- Park, forest, reserve
- Existing renewable energy generating project

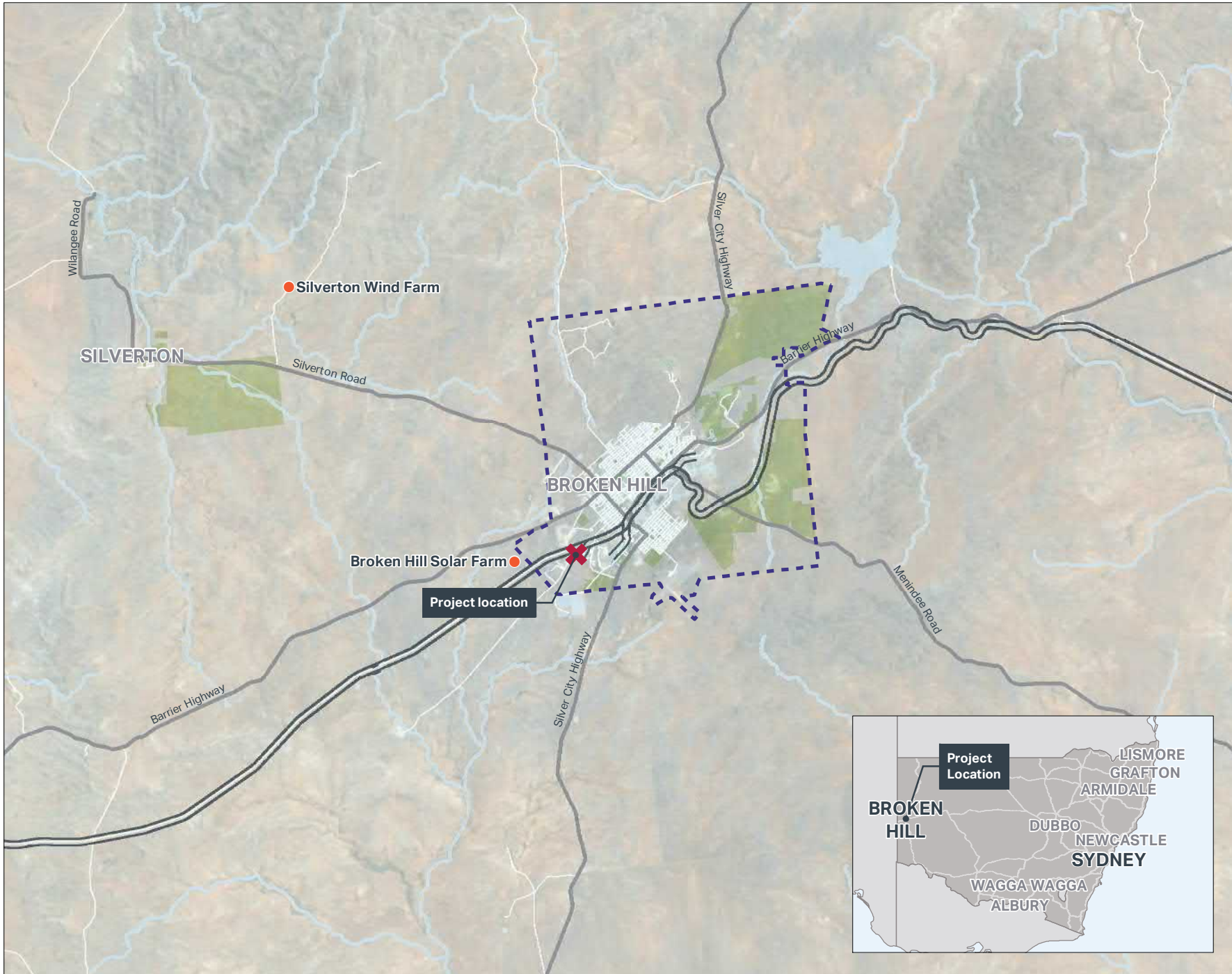


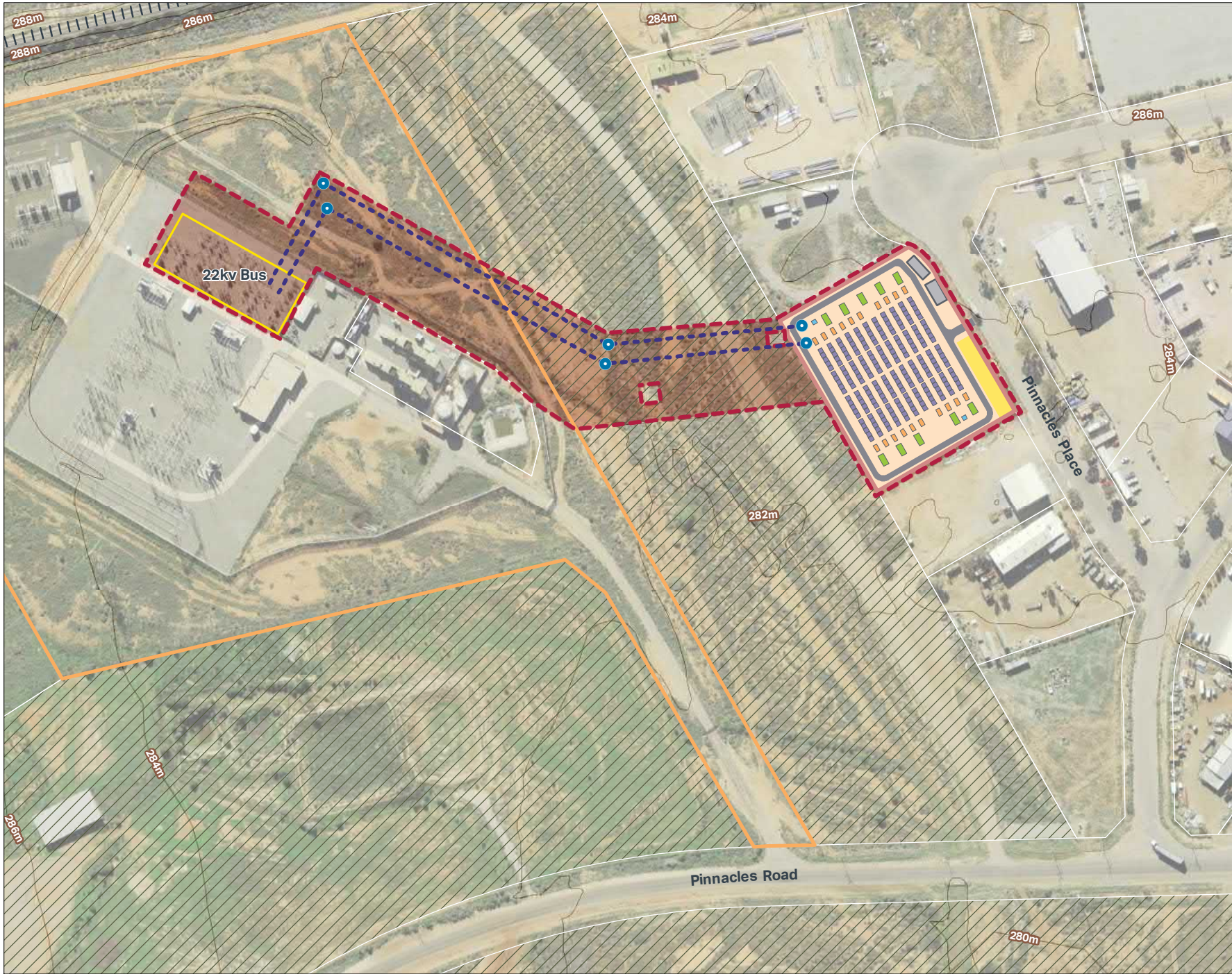
FIGURE F1: SITE LOCALITY

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- Legend**
- Project Area
 - Site
 - TransGrid Broken Hill Substation
 - 22kV Bus
 - Commons
 - Railway
 - Contour
 - Indicative overhead transmission line
 - Indicative transmission line pole
- Site features**
- Office building
 - Battery
 - Inverter
 - Medium voltage auxiliary switchboards
 - Transformer
 - Laydown area/operational parking area
 - Access road
 - Permeable surface

FIGURE F2: PROPOSED SITE LAYOUT

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Legend

- Project Area
- The Site
- Area identified for remedial works (AECOM, 2021b)
- Indicative overhead transmission line
- Indicative transmission line pole
- Borehole (AECOM, 2021a)
- Sample location (AECOM, 2021a)
- Stockpile (AECOM, 2021a)



**FIGURE F3:
BOREHOLE AND
SAMPLING LOCATIONS**

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Legend

- Project Area
- The Site
- Excavation Area (1.0 mbgl)
- Sample Locations
- Borehole (AECOM, 2021a)
- Sample location (AECOM, 2021a)



FIGURE F4:
VALIDATION ASSESSMENT
SAMPLE LOCATION

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Appendix B

Tables

Field ID	TP01_FLOOR_211208	TP01_Wall1_211208	TP01_Wall2_211208	TP01_Wall3_211208	TP01_Wall4_211208	QC100_211208	CRACKER DUST
Location Code	TP01_Floor	TP01_Wall1	TP01_Wall2	TP01_Wall3	TP01_Wall4	TP01_Wall4	CRACKER DUST
Sample Depth Range	1	0.5-1	0.5-1	0.5-1	0.5-1	0.5-1	
Sampled Date Time	8/12/2021	8/12/2021	8/12/2021	8/12/2021	8/12/2021	8/12/2021	8/12/2021
Sample Type	Normal	Normal	Normal	Normal	Normal	Field_D	Normal
Matrix Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Lab Report Number	ES2145031	ES2145031	ES2145031	ES2145031	ES2145031	ES2145031	ES2145031

CRC Care 2011 Table B4 Com/Ind D Soil HSL Direct Contact	NEPM 2013 Table 1A(1) HILs Com/Ind D Soil	NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind	NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil	NEPM 2013 Table 1A(3) Com/Ind D Soil HSL for Vapour Intrusion, Sand 0-1m	NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil

Chem Group	ChemName	Output Unit	LOR											
Total Petroleum Hydrocarbons	C6-C9 fraction	mg/kg	10											
	C10-C14 fraction	mg/kg	50											
	C15-C28 fraction	mg/kg	100											
	C29-C36 fraction	mg/kg	100											
	C10-C36 fraction (sum)	mg/kg	50											
Total Recoverable Hydrocarbons	C6-C10 fraction	mg/kg	10			700								
	C6-C10 fraction (minus BTEX)(F1)	mg/kg	10	26000			260	215						
	>C10-C16 (minus Naphthalene)(F2)	mg/kg	50	20000			NL	170						
	>C10-C16 fraction	mg/kg	50			1000		170						
	>C16-C34 fraction	mg/kg	100	27000			3500	1700						
	>C34-C40 fraction	mg/kg	100	38000			10000	3300						
Monocyclic Aromatic Hydrocarbons	>C10-C40 fraction (sum)	mg/kg	50											
	Benzene	mg/kg	0.2	430			3	75						
	Toluene	mg/kg	0.5	99000			NL	135						
	Ethylbenzene	mg/kg	0.5	27000			NL	165						
	m&p-Xylene	mg/kg	0.5											
	o-Xylene	mg/kg	0.5											
	Total Xylenes	mg/kg	0.5	81000			230	180						
Polynuclear Aromatic Hydrocarbons	Total BTEX	mg/kg	0.2											
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5		40									0.6
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5		40									<0.5
	Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.5		40									1.2
	Naphthalene	mg/kg	0.5			370		NL						<0.5
	Acenaphthylene	mg/kg	0.5											<0.5
	Acenaphthene	mg/kg	0.5											<0.5
	Anthracene	mg/kg	0.5											<0.5
	Fluorene	mg/kg	0.5											<0.5
	Phenanthrene	mg/kg	0.5											<0.5
	Fluoranthene	mg/kg	0.5											<0.5
	Benz(a)anthracene	mg/kg	0.5											<0.5
	Benzo(k)fluoranthene	mg/kg	0.5											<0.5
	Benzo(b&j)fluoranthene	mg/kg	0.5											<0.5
	Benzo(a)pyrene	mg/kg	0.5						1.4					<0.5
	Chrysene	mg/kg	0.5											<0.5
	Pyrene	mg/kg	0.5											<0.5
	Benzo(g,h,i)perylene	mg/kg	0.5											<0.5
	Dibenz(a,h)anthracene	mg/kg	0.5											<0.5
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5											<0.5
Sum of PAHs	mg/kg	0.5			4000								<0.5	
Metals	Arsenic	mg/kg	5		3000		160							<5
	Cadmium	mg/kg	1		900									<1
	Chromium	mg/kg	2											8
	Copper	mg/kg	5		240000									16
	Lead	mg/kg	5		1500									9
	Mercury	mg/kg	0.1		730									<0.1
	Nickel	mg/kg	2		6000									4
	Zinc	mg/kg	5		400000									59
Physico-Chemical Parameters	Moisture Content	%	1						5.6	14	13.1	15.3	14.6	16
	weight of sample	g	0.01											386
Polychlorinated Biphenyls	Polychlorinated Biphenyls	mg/kg	0.1		7									<0.1
Asbestos	Asbestos fibres	-	0.1											No
	Organic Fibre	g/kg	0.1											No
	Asbestos (Trace)	Fibres	5											No
	Synthetic Mineral Fibre	g/kg	0.1											No

Field ID	TP01_FLOOR_211208	TP01_Wall1_211208	TP01_Wall2_211208	TP01_Wall3_211208	TP01_Wall4_211208	QC100_211208	CRACKER DUST
Location Code	TP01_Floor	TP01_Wall1	TP01_Wall2	TP01_Wall3	TP01_Wall4	TP01_Wall4	CRACKER DUST
Sample Depth Range	1	0.5-1	0.5-1	0.5-1	0.5-1	0.5-1	-
Sample Date Time	8/12/2021	8/12/2021	8/12/2021	8/12/2021	8/12/2021	8/12/2021	8/12/2021
Sample Type	Normal	Normal	Normal	Normal	Normal	Field_D	Normal
Matrix Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Lab Report Number	ES2145031	ES2145031	ES2145031	ES2145031	ES2145031	ES2145031	ES2145031

NEPM 2013 Table 1B(6)
ESLs for Comm/Ind,
Coarse Soil

Chem_Group	ChemName	Output Unit	LOR	0-2m							
Total Petroleum Hydrocarbons	C6-C9 fraction	mg/kg	10		<10	<10	<10	<10	<10	<10	<10
	C10-C14 fraction	mg/kg	50		<50	<50	<50	<50	<50	<50	<50
	C15-C28 fraction	mg/kg	100		<100	<100	<100	<100	<100	<100	<100
	C29-C36 fraction	mg/kg	100		<100	<100	<100	<100	<100	<100	<100
	C10-C36 fraction (sum)	mg/kg	50		<50	<50	<50	<50	<50	<50	<50
Total Recoverable Hydrocarbons	C6-C10 fraction	mg/kg	10		<10	<10	<10	<10	<10	<10	<10
	C6-C10 fraction (minus BTEX)(F1)	mg/kg	10	215	<10	<10	<10	<10	<10	<10	<10
	>C10-C16 (minus Naphthalene)(F2)	mg/kg	50	170	<50	<50	<50	<50	<50	<50	<50
	>C10-C16 fraction	mg/kg	50	170	<50	<50	<50	<50	<50	<50	<50
	>C16-C34 fraction	mg/kg	100	1700	<100	<100	<100	<100	<100	<100	<100
	>C34-C40 fraction	mg/kg	100	3300	<100	<100	<100	<100	<100	<100	<100
Monocyclic Aromatic Hydrocarbons	>C10-C40 fraction (sum)	mg/kg	50		<50	<50	<50	<50	<50	<50	<50
	Benzene	mg/kg	0.2	75	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Toluene	mg/kg	0.5	135	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethylbenzene	mg/kg	0.5	165	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	m&p-Xylene	mg/kg	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	o-Xylene	mg/kg	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Total Xylenes	mg/kg	0.5	180	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Polynuclear Aromatic Hydrocarbons	Total BTEX	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5		-	-	-	-	-	-	0.6
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.5		-	-	-	-	-	-	1.2
	Naphthalene	mg/kg	0.5		<1	<1	<1	<1	<1	<1	<0.5
	Acenaphthylene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Acenaphthene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Anthracene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Fluorene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Phenanthrene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Fluoranthene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Benz(a)anthracene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Benzo(k)fluoranthene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Benzo(b&j)fluoranthene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Benzo(a)pyrene	mg/kg	0.5	1.4	-	-	-	-	-	-	<0.5
	Chrysene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Pyrene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Benzo(g,h,i)perylene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Dibenz(a,h)anthracene	mg/kg	0.5		-	-	-	-	-	-	<0.5
	Indeno(1,2,3-cd)pyrene	mg/kg	0.5		-	-	-	-	-	-	<0.5
Sum of PAHs	mg/kg	0.5		-	-	-	-	-	-	<0.5	
Metals	Arsenic	mg/kg	5		-	-	-	-	-	-	<5
	Cadmium	mg/kg	1		-	-	-	-	-	-	<1
	Chromium	mg/kg	2		-	-	-	-	-	-	8
	Copper	mg/kg	5		-	-	-	-	-	-	16
	Lead	mg/kg	5		-	-	-	-	-	-	9
	Mercury	mg/kg	0.1		-	-	-	-	-	-	<0.1
	Nickel	mg/kg	2		-	-	-	-	-	-	4
	Zinc	mg/kg	5		-	-	-	-	-	-	59
Physico-Chemical Parameters	Moisture Content	%	1	5.6	14	13.1	15.3	14.6	16		<1
	weight of sample	g	0.01		-	-	-	-	-	-	386
Polychlorinated	Polychlorinated Biphenyls	mg/kg	0.1		-	-	-	-	-	-	<0.1
	Asbestos fibres	-	0.1		-	-	-	-	-	-	No
Asbestos	Organic Fibre	g/kg	0.1		-	-	-	-	-	-	No
	Asbestos (Trace)	Fibres	5		-	-	-	-	-	-	No
	Synthetic Mineral Fibre	g/kg	0.1		-	-	-	-	-	-	No

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Appendix C

Field Notes

FIELDWORK QUALITY MANUAL

FQM-1.02-F1 - Daily Activity Report

Project Name:	Islington HBU <i>DEES</i>	Project Number:	60006148 <i>60619153</i>
Project Location:	240 Maitland Road, Islington NSW	Client:	Ampol <i>AGL</i>
Date of Fieldwork:	<i>Broken Hill 8/12/21</i>	PM Name:	Steve Bowly <i>OM/g Ferguson</i>
Time Arrive:	<i>0700</i>	Time Depart:	

Administration

Personnel On-Site:	<i>Tim Bezzina</i>
Contractors (Inducted, Downtime):	<i>Fisk, Dano Flea</i>

Tasks Undertaken

Describe tasks and time of activities undertaken, observations, communications with PM, clients and subcontractors etc.

- Cross out any unused portion of the site notes page
- Indicate any QAQC samples collected and note on tracking sheet
- Indicate observations of on-Site environmental receptors
- Record number of waste drums transported on and off-site

Indicate Weather Conditions:

0700 - Arrive onsite - Met Fisk (site owner), Dano (Solcon Manager) & Excavator operator.
- Discussed plan of remediation. Informed that excavated material can be reinstated with UENM or ENM.
- Identified area of soil impact where the IBC was removed. (IBC was only removed yesterday)
- Impacted soil was black with hydrocarbon odours.

0740 - (commenced) excavation - removal of N3 tonne into a Tipper Truck, which went straight to landfill. Fisk & Dano confirmed they would accept it.

0800 - Tipper Driver indicated the landfill would only accept it if a waste classification could be supplied.

0830 - Call ORLA to request waste class.

0930 - Waste class supplied (printer) & accompanied used tipper truck.
- Reinstatement soil to be supplied from Moersers Quarry (Cracker Dust). ENM certificate to be supplied.

1020 - Second load went out
1045 - Third load went out.
- 2x2 x 1m pit excavated. No more observation of visual/olfactory indications of contamination
- PID bags confirm this (All < 0.2ppm)

1100 - Same pit floor & walls.
1120 - pit reinstated with Cracker Dust.

1140 - Call Fisk to inform of completed works

1155 - Flea (Tipper driver) indicated the last load wasn't accepted because Broken Hill Landfill is not licensed to accept Hazardous waste.

Samples Collected:

<i>TP01 - Floor</i>	<i>TP01 - Wall 3</i>
<i>TP01 - Wall 1</i>	<i>TP01 - Wall 4</i>
<i>TP01 - Wall 2</i>	

HSE Actions

Describe any HSE actions or observations or additional information that is not recorded in the HSEP:

Approval and Distribution

Therese

 Fieldwork Staff Signature

8/12/21

 Date

Distribution: Project Central File

FIELDWORK QUALITY MANUAL

FQM-1.02-F1 – Daily Activity Report

Project Name:	Islington HBU <i>BEE'S</i>	Project Number:	66636448 <i>60619153</i>
Project Location:	240 Maitland Road, Islington NSW	Client:	Ampol <i>AGL</i>
Date of Fieldwork:	<i>Broken Hill 8/12/21</i>	PM Name:	<i>Steve Bowly Orig. Ferguson</i>
Time Arrive:	<i>0700</i>	Time Depart:	

Administration

Personnel On-Site:	" "		
Contractors (Inducted, Downtime):	" "		

Tasks Undertaken

Describe tasks and time of activities undertaken, observations, communications with PM, clients and subcontractors etc.

- Cross out any unused portion of the site notes page
- Indicate any QAQC samples collected and note on tracking sheet
- Indicate observations of on-Site environmental receptors
- Record number of waste drums transported on and off-site

Indicate Weather Conditions:

1210 - Call OF to inform request to sample clean fill.
1220 - Arrive @ Solcon depot, get scanned copies of the 2x disposal tickets.
- request testing (certificated) of clean fill - Turns out it was "manufactured sand" not clean fill & ∴ no testing has been undertaken. TS called Mowsons Quarry to ask if testing had been done, which it hadn't.
1230 - Collection of cracks dust sample.
1240 - Collection of sample from impacted soil that got refused entry to landfill (load 3).

1454 - Call from Dome; indicating "Cathine" from Council have "informally reported to the EPA" that hazardous material was disposed.
- Dome indicated that council have indicated that the material needs to be removed & directed to a licensed facility & only a licensed contractor could collect the material.
- Dome asked if I could go out to landfill with him to collect some additional samples, which I said to try to lower the classification of the waste, which I said no to. We are contractor by AGL, not Solcon & I could not work without a contract.

1500 - inform OF.
1510 - Call from Fisk - Informing of situation.
1525 - Call from Fisk - Asking if the material can be brought back to his site until re-waste classification sampling ^{results} are returned. I indicated I leave tomorrow & Solcon were informed by council they were not allowed to re-collect the material as they are not licensed for haz waste transport.

HSE Actions

Describe any HSE actions or observations or additional information that is not recorded in the HSEP

Approval and Distribution

[Signature]

 Fieldwork Staff Signature

8/12/21

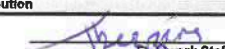

 Date

Distribution: Project Central File

FQM - Soil Sampling - Validation sampling record

Project Name:		Project Number:		PM Name:		PID Model & Serial Number:	
AGL		60619153		O. Fergin		TIGER	
Client:		Project Location:		Fieldwork Staff:		Number:	
AGL		Brimmer Hill		T. Bazzani		T-118252	
Date	Excavation ID	Sample ID	Location (line / bowser / floor / wall)	Depth	Matrix (fill / natural)	PID (ppm)	Observations (soil characteristics, components, odour, staining, etc.)
8/12/21	TP01	TP01-FLOOR	Floor	1.0m	Natural	0.1	Silty sand, reddish brown, Fine, dry, loose. Trace SA-SR gravels ~ 2-10mm. No U/O.
"	↓	TP01-wall 1	wall	0.5-1.0m	Natural	0.2	
"	↓	TP01-wall 2	wall	"	Natural	0.2	
"	↓	TP01-wall 3	wall	"	Natural	0.1	
"	↓	TP01-wall 4	wall	"	Natural	0.0	↓
"	" "	TP01-Loc 3	Loc 3 - Excavated Soil	-	-	0.2	" " (collected from local disclosure) at Loc 3. No U/O
"	-	Cracker Dust	Reinstated pit	-	-	0.0	Silty gravel, grey, SR, dry ~ 1mm. No U/O
"	-	QC300	Rinsate - Trowel	-	-	-	Rinsate Blank - water at bottom of Trowel
"	-	QC100	TP01-wall 4	0.5-1.0	Natural	0.0	-

Approval and Distribution

 _____  _____
 Fieldwork Staff Signature Date Project Manager Signature Date

Distribution: Project Central File

ANZ

FQM - Soil Sampling - Validaton sampling record

Project Name:		Broken Hill Battery Energy Storage System Project		Project Number:		60619153		PM Name:		O. Ferguson		PID Model &		Tiger	
Client:		AGL Energy Limited		Project Location:		Broken Hill		Fieldwork Staff:		T. Bezzina		Serial Number:		T-118252	
Date	Excavation ID	Sample ID	Location (line / bowser / floor / wall)	Depth	Matrix (fill / natural)	PID (ppm)	Observations (soil characteristics, components, odour, staining, etc.)								
8/12/2021	TP01	TP01_Floor	Floor	1.0 m	Natural	0.1	Silty sand, reddish brown colour. Fine, dry, loose. Trace sub-angular - sub-rounded gravels (~2-10 mm). No visual or olfactory signs of contamination noted.								
8/12/2021	TP01	TP01_Wall 1	Wall	0.5-1.0 m	Natural	0.2	Silty sand, reddish brown colour. Fine, dry, loose. Trace sub-angular - sub-rounded gravels (~2-10 mm). No visual or olfactory signs of contamination noted.								
8/12/2021	TP01	TP01_Wall 2	Wall	0.5-1.0 m	Natural	0.2	Silty sand, reddish brown colour. Fine, dry, loose. Trace sub-angular - sub-rounded gravels (~2-10 mm). No visual or olfactory signs of contamination noted.								
8/12/2021	TP01	TP01_Wall 3	Wall	0.5-1.0 m	Natural	0.1	Silty sand, reddish brown colour. Fine, dry, loose. Trace sub-angular - sub-rounded gravels (~2-10 mm). No visual or olfactory signs of contamination noted.								
8/12/2021	TP01	TP01_Wall 4	Wall	0.5-1.0 m	Natural	0	Silty sand, reddish brown colour. Fine, dry, loose. Trace sub-angular - sub-rounded gravels (~2-10 mm). No visual or olfactory signs of contamination noted.								
8/12/2021	TP01	TP01_Load 3	Load 3 - Excavated Soil	-	-	0.2	Collected from load rejected at landfill. Silty sand, reddish brown colour. Fine, dry, loose. Trace sub-angular - sub-rounded gravels (~2-10 mm). No contamination (visual or odour) noted.								
8/12/2021	TP01	Cracker Dust	Reinstated Pit	-	-	0	Silty gravel, grey in colour. Dry. Sub-rounded gravels (~1 mm). No visual or olfactory signs of contamination noted.								
8/12/2021	-	QC300	Rinsate - Trowel	-	-	-	Rinsate blank - water off decontaminated trowel.								
8/12/2021	-	QC100	TP01_Wall 4	0.5-1.0 m	Natural	0	-								

Approval and Distribution			
_____ Fieldwork Staff Signature	_____ Date	_____ Project Manager Signature	_____ Date
Distribution: Project Central File			

DRAFT

Appendix D

Laboratory Results

CERTIFICATE OF ANALYSIS

Work Order : **ES2145031**
Client : **AECOM AUSTRALIA PTY LTD**
Contact : **MS ORLA FERGUSON**
Address : **LEVEL 21 420 GEORGE STREET**
SYDNEY NSW, AUSTRALIA 2000
Telephone : **+61 02 8934 0000**
Project : **60619153**
Order number : **60619153**
C-O-C number : **----**
Sampler : **TIM BEZZINA**
Site : **----**
Quote number : **EN/004/21**
No. of samples received : **9**
No. of samples analysed : **8**

Page : 1 of 8
Laboratory : Environmental Division Sydney
Contact : Brenda Hong
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61 2 8784 8555
Date Samples Received : 09-Dec-2021 16:00
Date Analysis Commenced : 09-Dec-2021
Issue Date : 14-Dec-2021 12:20



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, unless the sampling was conducted by ALS. 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>
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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, 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP01_FLOOR_211208	TP01_Wall1_211208	TP01_Wall2_211208	TP01_Wall3_211208	TP01_Wall4_211208
Sampling date / time				08-Dec-2021 00:00	08-Dec-2021 00:00	08-Dec-2021 00:00	08-Dec-2021 00:00	08-Dec-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2145031-001	ES2145031-002	ES2145031-003	ES2145031-004	ES2145031-005	
				Result	Result	Result	Result	Result	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	5.6	14.0	13.1	15.3	14.6	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	116	100	95.2	93.7	84.8	
Toluene-D8	2037-26-5	0.2	%	117	103	101	96.8	77.3	
4-Bromofluorobenzene	460-00-4	0.2	%	107	92.9	85.4	90.3	73.4	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		QC100_211208	CRACKER DUST	----	----	----
		Sampling date / time		08-Dec-2021 00:00	08-Dec-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2145031-006	ES2145031-008	-----	-----	-----
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	16.0	<1.0	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	----	----	----
Asbestos Type	1332-21-4	-	--	----	-	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	----	No	----	----	----
Organic Fibre	----	0.1	g/kg	----	No	----	----	----
Sample weight (dry)	----	0.01	g	----	386	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	B.SCHRADER	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	----	8	----	----	----
Copper	7440-50-8	5	mg/kg	----	16	----	----	----
Lead	7439-92-1	5	mg/kg	----	9	----	----	----
Nickel	7440-02-0	2	mg/kg	----	4	----	----	----
Zinc	7440-66-6	5	mg/kg	----	59	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC100_211208	CRACKER DUST	----	----	----
Sampling date / time				08-Dec-2021 00:00	08-Dec-2021 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	ES2145031-006	ES2145031-008	-----	-----	-----	
				Result	Result	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	----	----	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----	
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----	
EP066S: PCB Surrogate									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC100_211208	CRACKER DUST	----	----	----
Sampling date / time				08-Dec-2021 00:00	08-Dec-2021 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	ES2145031-006	ES2145031-008	-----	-----	-----	
				Result	Result	----	----	----	
EP066S: PCB Surrogate - Continued									
Decachlorobiphenyl	2051-24-3	0.1	%	----	94.0	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	----	83.3	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	----	86.4	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	----	71.0	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	----	95.5	----	----	----	
Anthracene-d10	1719-06-8	0.5	%	----	103	----	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	----	79.1	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	99.4	110	----	----	----	
Toluene-D8	2037-26-5	0.2	%	98.7	115	----	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	88.3	98.4	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		QC300_211208	----	----	----	----
		Sampling date / time		08-Dec-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2145031-007	-----	-----	-----	-----
				Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<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	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<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	----	----	----	----
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	%	102	----	----	----	----
Toluene-D8	2037-26-5	2	%	106	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	106	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: SOIL

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	CRACKER DUST - 08-Dec-2021 00:00	A soil sample.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils



QUALITY CONTROL REPORT

Work Order : ES2145031

Page : 1 of 8

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : MS ORLA FERGUSON

Contact : Brenda Hong

Address : LEVEL 21 420 GEORGE STREET
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000

Telephone : +61 2 8784 8555

Project : 60619153

Date Samples Received : 09-Dec-2021

Order number : 60619153

Date Analysis Commenced : 09-Dec-2021

C-O-C number : ----

Issue Date : 14-Dec-2021

Sampler : TIM BEZZINA

Site : ----

Quote number : EN/004/21

No. of samples received : 9

No. of samples analysed : 8



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, unless the sampling was conducted by ALS. 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
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



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The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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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.

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4073402)									
ES2145031-008	CRACKER DUST	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	9	14.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	21	25.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	10	13.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	59	68	15.3	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4069481)									
ES2144944-020	Anonymous	EA055: Moisture Content	----	0.1	%	19.4	19.4	0.0	0% - 20%
ES2145031-003	TP01_Wall2_211208	EA055: Moisture Content	----	0.1	%	13.1	13.2	1.1	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4073401)									
ES2145031-008	CRACKER DUST	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4067693)									
ES2145076-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4067692)									
ES2145076-002	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 4067173) - continued									
ES2145031-005	TP01_Wall4_211208	EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4069860)									
ES2145209-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4069860)									
ES2145209-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 4069860)									
ES2145209-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4073402)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	88.5	88.0	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	72.4	70.0	130	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	98.7	68.0	132	
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	96.7	89.0	111	
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	82.9	82.0	119	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	80.3	80.0	120	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	77.2	66.0	133	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4073401)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	81.0	70.0	125	
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4067693)									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	110	62.0	126	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4067692)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	91.8	77.0	125	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	95.8	72.0	124	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	90.9	73.0	127	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	94.0	72.0	126	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	94.2	75.0	127	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	92.0	77.0	127	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	90.7	73.0	127	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	91.5	74.0	128	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	93.6	69.0	123	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	97.9	75.0	127	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	92.4	68.0	116	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	86.9	74.0	126	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	94.1	70.0	126	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	80.8	61.0	121	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	84.2	62.0	118	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	70.4	63.0	121	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4067173)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	95.1	68.4	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4067691)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	90.8	75.0	129	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	94.2	77.0	131	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4067691) - continued									
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	89.2	71.0	129	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4067173)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	94.6	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4067691)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	95.9	77.0	125	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	90.9	74.0	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	82.2	63.0	131	
EP080: BTEXN (QCLot: 4067173)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	80.7	62.0	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	86.4	67.0	121	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	84.0	65.0	117	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	85.3	66.0	118	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	85.3	68.0	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	73.6	63.0	119	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4068247)									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	82.2	55.8	112	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	84.8	71.6	113	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	84.4	56.0	121	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4069860)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	76.7	75.0	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4068247)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	78.5	57.9	119	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	85.9	62.5	110	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	68.0	61.5	121	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4069860)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	82.4	75.0	127	
EP080: BTEXN (QCLot: 4069860)									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	80.9	70.0	122	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	87.8	69.0	123	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	93.5	70.0	120	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	92.0	69.0	121	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	95.1	72.0	122	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
EP080: BTEXN (QCLot: 4069860) - continued								
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	100	70.0	120

Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4073402)							
ES2145031-008	CRACKER DUST	EG005T: Arsenic	7440-38-2	100 mg/kg	94.3	70.0	130
		EG005T: Cadmium	7440-43-9	100 mg/kg	83.6	70.0	130
		EG005T: Chromium	7440-47-3	100 mg/kg	84.2	68.0	132
		EG005T: Copper	7440-50-8	500 mg/kg	91.7	70.0	130
		EG005T: Lead	7439-92-1	500 mg/kg	84.7	70.0	130
		EG005T: Nickel	7440-02-0	100 mg/kg	87.4	70.0	130
		EG005T: Zinc	7440-66-6	500 mg/kg	81.0	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4073401)							
ES2145031-008	CRACKER DUST	EG035T: Mercury	7439-97-6	10 mg/kg	91.5	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4067693)							
ES2145076-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	108	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4067692)							
ES2145076-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	90.0	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	88.3	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4067173)							
ES2144369-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	78.2	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4067691)							
ES2145076-002	Anonymous	EP071: C10 - C14 Fraction	----	480 mg/kg	93.5	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	109	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	116	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4067173)							
ES2144369-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	78.6	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4067691)							
ES2145076-002	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	101	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	113	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	106	52.0	132



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Acceptable Limits (%)		
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EP080: BTEXN (QCLot: 4067173)								
ES2144369-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	70.2	70.0	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	77.4	70.0	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	82.6	70.0	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	77.6	70.0	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	85.6	70.0	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	84.6	70.0	130		

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Acceptable Limits (%)		
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4069860)								
ES2145209-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	103	70.0	130	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4069860)								
ES2145209-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	103	70.0	130	
EP080: BTEXN (QCLot: 4069860)								
ES2145209-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	93.8	70.0	130	
		EP080: Toluene	108-88-3	25 µg/L	101	70.0	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	108	70.0	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	104	70.0	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	108	70.0	130	
	EP080: Naphthalene	91-20-3	25 µg/L	108	70.0	130		

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2145031	Page	: 1 of 8
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MS ORLA FERGUSON	Telephone	: +61 2 8784 8555
Project	: 60619153	Date Samples Received	: 09-Dec-2021
Site	: ----	Issue Date	: 14-Dec-2021
Sampler	: TIM BEZZINA	No. of samples received	: 9
Order number	: 60619153	No. of samples analysed	: 8

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

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



Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) TP01_Wall4_211208	08-Dec-2021	----	----	----	09-Dec-2021	22-Dec-2021	✓
Soil Glass Jar - Unpreserved (EA055) TP01_FLOOR_211208, TP01_Wall2_211208, QC100_211208, TP01_Wall1_211208, TP01_Wall3_211208, CRACKER DUST	08-Dec-2021	----	----	----	10-Dec-2021	22-Dec-2021	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag (EA200) CRACKER DUST	08-Dec-2021	----	----	----	13-Dec-2021	06-Jun-2022	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) CRACKER DUST	08-Dec-2021	13-Dec-2021	06-Jun-2022	✓	13-Dec-2021	06-Jun-2022	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) CRACKER DUST	08-Dec-2021	13-Dec-2021	05-Jan-2022	✓	13-Dec-2021	05-Jan-2022	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066) CRACKER DUST	08-Dec-2021	10-Dec-2021	22-Dec-2021	✓	11-Dec-2021	19-Jan-2022	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) CRACKER DUST	08-Dec-2021	10-Dec-2021	22-Dec-2021	✓	11-Dec-2021	19-Jan-2022	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080) TP01_FLOOR_211208, TP01_Wall2_211208, TP01_Wall4_211208, CRACKER DUST	TP01_Wall1_211208, TP01_Wall3_211208, QC100_211208,	08-Dec-2021	09-Dec-2021	22-Dec-2021	✓	13-Dec-2021	22-Dec-2021	✓
Soil Glass Jar - Unpreserved (EP071) TP01_FLOOR_211208, TP01_Wall2_211208, TP01_Wall4_211208, CRACKER DUST	TP01_Wall1_211208, TP01_Wall3_211208, QC100_211208,	08-Dec-2021	10-Dec-2021	22-Dec-2021	✓	11-Dec-2021	19-Jan-2022	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080) TP01_FLOOR_211208, TP01_Wall2_211208, TP01_Wall4_211208, CRACKER DUST	TP01_Wall1_211208, TP01_Wall3_211208, QC100_211208,	08-Dec-2021	09-Dec-2021	22-Dec-2021	✓	13-Dec-2021	22-Dec-2021	✓
Soil Glass Jar - Unpreserved (EP071) TP01_FLOOR_211208, TP01_Wall2_211208, TP01_Wall4_211208, CRACKER DUST	TP01_Wall1_211208, TP01_Wall3_211208, QC100_211208,	08-Dec-2021	10-Dec-2021	22-Dec-2021	✓	11-Dec-2021	19-Jan-2022	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) TP01_FLOOR_211208, TP01_Wall2_211208, TP01_Wall4_211208, CRACKER DUST	TP01_Wall1_211208, TP01_Wall3_211208, QC100_211208,	08-Dec-2021	09-Dec-2021	22-Dec-2021	✓	13-Dec-2021	22-Dec-2021	✓

Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) QC300_211208		08-Dec-2021	10-Dec-2021	15-Dec-2021	✓	11-Dec-2021	19-Jan-2022	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC300_211208		08-Dec-2021	10-Dec-2021	22-Dec-2021	✓	10-Dec-2021	22-Dec-2021	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) QC300_211208		08-Dec-2021	10-Dec-2021	15-Dec-2021	✓	11-Dec-2021	19-Jan-2022	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC300_211208		08-Dec-2021	10-Dec-2021	22-Dec-2021	✓	10-Dec-2021	22-Dec-2021	✓

Page : 4 of 8
 Work Order : ES2145031
 Client : AECOM AUSTRALIA PTY LTD
 Project : 60619153



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC300_211208	08-Dec-2021	10-Dec-2021	22-Dec-2021	✓	10-Dec-2021	22-Dec-2021	✓



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	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	1	100.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	1	100.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	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	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							



Matrix: **WATER**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	8	12.50	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
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 Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
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 Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to 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 Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. 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 Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 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 Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 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 Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 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 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 purging.

TAT

ALS Environmental CHAIN OF CUSTODY

ADELAIDE 21 Burma Road Pooraka SA 5065 Ph: 08 8359 0890 E: edelaide@alsglobal.com
 BRISBANE 32 Shandi Street Stammers QLD 4003 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
 GLADSTONE 46 Callenderish Drive Clinton QLD 4650 Ph: 07 7471 5600 E: gladstone@alsglobal.com
 MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0777 E: mackay@alsglobal.com
 MELBOURNE 2-4 Weston Road Springvale VIC 3171 Ph: 03 8549 5600 E: samples.melbourne@alsglobal.com
 MURDOCH 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 8735 E: mudgee@alsglobal.com
 NEWCASTLE 5 Rose Gum Road Warbrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com
 NOOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
 PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
 SYDNEY 277-285 York Road Southfield NSW 2164 Ph: 02 9744 8555 E: samples.sydney@alsglobal.com
 TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0800 E: townsville@alsglobal.com
 WOLLONGONG 98 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: **ALCOM** OFFICE: **Sydney** PROJECT: **60619153** ORDER NUMBER: _____

TURNAROUND REQUIREMENTS: Standard TAT (List due date): _____ Non Standard or urgent TAT (List due date): **48hr - PRIORITY**

FOR LABORATORY USE ONLY (Circle):
 Custody Seal Intact? Yes No N/A
 Free ice / frozen ice bricks present upon receipt? Yes No N/A
 Random Sample Temperature on Receipt: _____ °C
 Other comment: **CLL**

PROJECT MANAGER: **Orla Ferguson** CONTACT PH: _____
 SAMPLER: **Tim Bezzina** SAMPLER MOBILE: **0428163681** RELINQUISHED BY: **Orla Ferguson** RECEIVED BY: **SOJ/MD**
 COC emailed to ALS? (YES / NO) _____ EDD FORMAT (or default): _____ DATE/TIME: **9/12/21 - 1530** DATE/TIME: **09/12/21 1600**

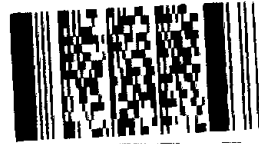
1 Email Reports to (will default to PM if no other addresses are listed) **Orla.Ferguson@alcom.com**
 1 Email Invoices to (will default to PM if no other addresses are listed) **tim.bezzina@alcom.com**

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information			
						TRH, BTEX	PAH, PCB'S	Asbestos								
1	TPol-Floor-21208	8/12/21														
2	TPol-Wall 1-211208	↓													ASAP TAT on all samples. Please indicate 24-48 TAT is required on results.	
3	TPol-Wall 2-211208															
4	TPol-Wall 3-211208															
5	TPol-Wall 4-211208															
6	QL100-211208															
7	QL300-211208															
8	Cracker Dust						X	X	X							
9	TPol-load 3															X
TOTAL																

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialion bottle; SP = Sulfuric Preserved Plastic
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division
 Sydney
 Work Order Reference
ES2145031





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2145031

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MS ORLA FERGUSON	Contact	: Brenda Hong
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: Orla.Ferguson@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60619153	Page	: 1 of 3
Order number	: 60619153	Quote number	: ES2021AECOMAU0044 (EN/004/21)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: TIM BEZZINA		

Dates

Date Samples Received	: 09-Dec-2021 16:00	Issue Date	: 09-Dec-2021
Client Requested Due Date	: 13-Dec-2021	Scheduled Reporting Date	: 13-Dec-2021

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 14.4'C
Receipt Detail	:	No. of samples received / analysed	: 9 / 8

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EA200 Asbestos Identification in Soils -	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - S-07 TRH/BTEXN/PAH (SIM)	SOIL - TPH only TRH (C6 - C40)
ES2145031-001	08-Dec-2021 00:00	TP01_FLOOR_211208		✓				✓
ES2145031-002	08-Dec-2021 00:00	TP01_Wall1_211208		✓				✓
ES2145031-003	08-Dec-2021 00:00	TP01_Wall2_211208		✓				✓
ES2145031-004	08-Dec-2021 00:00	TP01_Wall3_211208		✓				✓
ES2145031-005	08-Dec-2021 00:00	TP01_Wall4_211208		✓				✓
ES2145031-006	08-Dec-2021 00:00	QC100_211208		✓				✓
ES2145031-008	08-Dec-2021 00:00	CRACKER DUST		✓	✓	✓	✓	
ES2145031-009	08-Dec-2021 00:00	TP01_LOAD 3	✓					

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - TPH TRH (C6-C40)
ES2145031-007	08-Dec-2021 00:00	QC300_211208	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC) Email AP_CustomerService.ANZ@aecom.com

ORLA FERGUSON

- *AU Certificate of Analysis - NATA (COA) Email Orla.Ferguson@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email Orla.Ferguson@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email Orla.Ferguson@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email Orla.Ferguson@aecom.com
- Chain of Custody (CoC) (COC) Email Orla.Ferguson@aecom.com
- EDI Format - ENMRG (ENMRG) Email Orla.Ferguson@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM) Email Orla.Ferguson@aecom.com
- EDI Format - ESDAT (ESDAT) Email Orla.Ferguson@aecom.com

TIM BEZZINA

- A4 - AU Tax Invoice (INV) Email tim.bezzina@aecom.com

DRAFT

Appendix E

Data Validation

Data Validation					
Project number:	60619153	Validation by:	M. Taylor	Date:	20/12/2021
Client:	AGL Energy Limited				
Site:	74-80 Pinnacles Place, Broken Hill, NSW 2880				
Matrix type:	Soil	Data verified by:	O. Ferguson	Date:	21/12/2021
Samples:	6 primary, 1 rinsate and 1 intra-laboratory duplicate				
Laboratory:	ALS				
Lab reference:	ES2145031	Project Manager:	L. Buxton		
Key Issues:	No issues were identified. AECOM considers that the field procedures and laboratory QA/QC processes employed were appropriate for the purposes of the investigation.				
Field Quality Assurance and Quality Control					
Sampling personnel	Sampling was conducted by T. Bezzina on 8 December 2021. The AECOM sampling person was suitably qualified and experienced.				
Sampling Methodology	Samples were collected from a decontaminated stainless steel hand trowel and placed directly into laboratory supplied sample containers. Caps were immediately applied and soil samples were stored on ice for preservation. A new pair of nitrile gloves was used for each sample collection.				
Chain of Custody (COC)	All samples were recorded and analysed as requested on the COC.				
Rinsate Blank	Rinsate blank sample was collected at a frequency of one per day (1 in total) from decontaminated sample collection equipment (stainless steel trowel) and analysed for TRH/TPH and BTEXN. Analysis results of rinsate were reported below the limit of reporting (LOR) for all contaminants.				
Trip Blank	No trip blanks were collected during validation sampling.				
Trip Spike	No trip spikes were collected during validation sampling.				
Handling and preservation	Samples were placed in a chilled cooler between sampling and analysis. Samples were received in appropriate containers. The sample receipt temperature of 14.4°C was outside the recommended temperature (6.0°C). The elevated temperature is attributed to samples being transported overnight from Broken Hill to Sydney. The laboratory noted that ice was present upon receipt of samples. It is considered that the samples were appropriately chilled for most of the transport from Broken Hill to the laboratory in Sydney.				
Calibration of equipment	Field screening was undertaken using a Photo-ionisation detector (PID), which was calibrated by the supplier prior to use. Calibration certificates are presented in Appendix H of the Validation Report.				
Laboratory QA/QC					
DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the report.				
Tests requested/reported	All samples were analysed as requested on the COC. Samples were not requested to be analysed for BTEXN, however this analysis was completed.				
Holding time compliance	Samples were extracted and analysed within recommended holding times.				

Data Validation					
Project number:	60619153	Validation by:	M. Taylor	Date:	20/12/2021
Client:	AGL Energy Limited				
Site:	74-80 Pinnacles Place, Broken Hill, NSW 2880				
Matrix type:	Soil	Data verified by:	O. Ferguson	Date:	21/12/2021
Samples:	6 primary, 1 rinsate and 1 intra-laboratory duplicate				
Laboratory:	ALS				
Lab reference:	ES2145031	Project Manager:	L. Buxton		
Laboratory	ALS Environmental Pty Ltd (Sydney) is a National Association of Testing Authorities (NATA) accredited laboratory (Accreditation No. 825).				
Frequency of laboratory QC	<p>ALS reported a sufficient frequency of quality control samples, with the exception of the following:</p> <ul style="list-style-type: none"> ES2145031: TRH Semivolatile Fraction (DUP) – Actual: 0.00% / Expected: 10.00% ES2145031: TRH Semivolatile Fraction (MS) – Actual: 0.00% / Expected: 5.00% <p>These results relate to rinsate (water) samples and therefore do not affect the reliability of the soil sample results.</p>				
Method Blank	All method blank concentrations were below the LOR.				
Laboratory duplicate RPDs	The Relative Percentage Differences (RPD) between the primary sample and intralaboratory sample met the control limits.				
QA/QC Data Evaluation					
Laboratory control spike recovery	Laboratory Control Spike (LCS) recoveries met the control limits.				
Matrix spike recovery	Matrix Spike (MS) recoveries met the control limits.				
Surrogate spike recovery	Surrogate spike recoveries met the control limits.				
QA/QC Data Evaluation					
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.				
Data transcription	A check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.				
Limits of reporting	Limits of Reporting were sufficient to enable assessment against adopted human health and ecological screening levels.				
Field intralab and interlab duplicate RPDs	<p>Intralab field duplicate samples were collected at a frequency of 1 duplicate sample per 20 primary samples. No interlab field duplicate samples were collected during the validation sampling.</p> <p>All field duplicate RPDs were reported within control limits (<30%).</p>				
Overall Assessment					
Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.					

Lab Report Number	ES2145031	ES2145031	
Field ID	TP01_Wall4_211208	QC100_211208	RPD
Sampled Date/Time	8/12/2021 15:00	8/12/2021 15:00	

Filter	Chem_Group	ChemName	Units	LOR			
Total Petroleum Hydrocarbons	Total Petroleum Hydrocarbons	C6-C9 fraction	mg/kg	10	<10	<10	0
Total Petroleum Hydrocarbons		C10-C14 fraction	mg/kg	50	<50	<50	0
Total Petroleum Hydrocarbons		C15-C28 fraction	mg/kg	100	<100	<100	0
Total Petroleum Hydrocarbons		C29-C36 fraction	mg/kg	100	<100	<100	0
Total Petroleum Hydrocarbons		C10-C36 fraction (sum)	mg/kg	50	<50	<50	0
Total Recoverable Hydrocarbons	Total Recoverable Hydrocarbons	C6-C10 fraction	mg/kg	10	<10	<10	0
Total Recoverable Hydrocarbons		C6-C10 fraction (minus BTEX)(F1)	mg/kg	10	<10	<10	0
Total Recoverable Hydrocarbons		>C10-C16 (minus Naphthalene)(F2)	mg/kg	50	<50	<50	0
Total Recoverable Hydrocarbons		>C10-C16 fraction	mg/kg	50	<50	<50	0
Total Recoverable Hydrocarbons		>C16-C34 fraction	mg/kg	100	<100	<100	0
Total Recoverable Hydrocarbons		>C34-C40 fraction	mg/kg	100	<100	<100	0
Total Recoverable Hydrocarbons		>C10-C40 fraction (sum)	mg/kg	50	<50	<50	0
Monocyclic Aromatic Hydrocarbons	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.2	<0.2	<0.2	0
Monocyclic Aromatic Hydrocarbons		Toluene	mg/kg	0.5	<0.5	<0.5	0
Monocyclic Aromatic Hydrocarbons		Ethylbenzene	mg/kg	0.5	<0.5	<0.5	0
Monocyclic Aromatic Hydrocarbons		m&p-Xylene	mg/kg	0.5	<0.5	<0.5	0
Monocyclic Aromatic Hydrocarbons		o-Xylene	mg/kg	0.5	<0.5	<0.5	0
Monocyclic Aromatic Hydrocarbons		Total Xylenes	mg/kg	0.5	<0.5	<0.5	0
Monocyclic Aromatic Hydrocarbons		Total BTEX	mg/kg	0.2	<0.2	<0.2	0
Polynuclear Aromatic Hydrocarbons	Polynuclear Aromatic Hydrocarbons	Naphthalene	mg/kg	1	<1	<1	0
Physico-Chemical Parameters	Physico-Chemical Parameters	Moisture Content	%	1	14.6	16	9

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 30 (1-10 x EQL); 30 (10-20 x EQL); 30 (> 20 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary lab

Lab Report Number	ES2145031
Field ID	QC300_211208
Sampled Date/Time	8/12/2021 15:00
Sample Type	Rinsate

Filter	Chem_Group	ChemName	Units	LOR	
Monocyclic Aromatic Hydrocarbons	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	1	<1
Monocyclic Aromatic Hydrocarbons		Toluene	µg/L	2	<2
Monocyclic Aromatic Hydrocarbons		Ethylbenzene	µg/L	2	<2
Monocyclic Aromatic Hydrocarbons		m&p-Xylene	µg/L	2	<2
Monocyclic Aromatic Hydrocarbons		o-Xylene	µg/L	2	<2
Monocyclic Aromatic Hydrocarbons		Total Xylenes	µg/L	2	<2
Monocyclic Aromatic Hydrocarbons		Total BTEX	µg/L	1	<1
Monocyclic Aromatic Hydrocarbons					
Polynuclear Aromatic Hydrocarbons	Polynuclear Aromatic Hydrocarbons	Naphthalene	µg/L	5	<5
Polynuclear Aromatic Hydrocarbons					
Total Petroleum Hydrocarbons	Total Petroleum Hydrocarbons	C6-C9 fraction	µg/L	20	<20
Total Petroleum Hydrocarbons		C10-C14 fraction	µg/L	50	<50
Total Petroleum Hydrocarbons		C15-C28 fraction	µg/L	100	<100
Total Petroleum Hydrocarbons		C29-C36 fraction	µg/L	50	<50
Total Petroleum Hydrocarbons		C10-C36 fraction (sum)	µg/L	50	<50
Total Petroleum Hydrocarbons					
Total Recoverable Hydrocarbons	Total Recoverable Hydrocarbons	C6-C10 fraction	µg/L	20	<20
Total Recoverable Hydrocarbons		C6-C10 fraction (minus BTEX)(F1)	µg/L	20	<20
Total Recoverable Hydrocarbons		>C10-C16 (minus Naphthalene)(F2)	µg/L	100	<100
Total Recoverable Hydrocarbons		>C10-C16 fraction	µg/L	100	<100
Total Recoverable Hydrocarbons		>C16-C34 fraction	µg/L	100	<100
Total Recoverable Hydrocarbons		>C34-C40 fraction	µg/L	100	<100
Total Recoverable Hydrocarbons		>C10-C40 fraction (sum)	µg/L	100	<100

DRAFT

Appendix F

Imported Material Documentation



Building Partnerships for

100 Years

111871

HEAD OFFICE: 141 KING GEORGE ST
COHUNA VICTORIA 3568
TEL: (03) 5456 2409 FAX: (03) 5456 2428

E. B. MAWSON & SONS PTY. LTD.
ACN 004 519 617 ABN 14 004 519 617

TAX INVOICE

DELIVERY DOCKET

CUSTOMER

SOLECON TRADING PTY LTD
P O BOX 6040
BROKEN HILL NSW 2880

DELIVERY SITE

EX BIN

CARRIER

SOLECON

PRODUCT

3mm dust

WEIGHT (TONNES)

GROSS 19.98

TARE 10.20

NET 9.78

PROGRESSIVE QTY 9.78

PLANT 5718

ORDER No.

DOCKET NUMBER 5787876

DATE AND TIME 08/12/2021 10:52

CUSTOMER ORDER No.

QUOTE No.

LOT No.

LEAD

KM

CASH SALE RATE

AMOUNT

TOTAL

GST

TOTAL INCL GST

LOOK UP AND LIVE! BE AWARE OF POWERLINES



[Signature]

RECEIVED BY

Material Test Report

Report Number: 57-320
Issue Number: 1
Date Issued: 27/11/2020
Client: MAWSONS QUARRY - BROKEN HILL (57)
 1 HOLTEN DRV, BROKEN HILL NSW 2880
Project Number: 57
Project Name: Construction Materials Testing
Work Request: 378
Sample Number: B20-378A
Date Sampled: 26/11/2020
Dates Tested: 26/11/2020 - 27/11/2020
Sampling Method: AS 1141.3.1 9.3 - Sampling aided by power equipment - with backblading
Sample Location: BHQ STOCKPILE
Material: Broken Hill - 5mm Dust - 5D



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 for over
100
 Years

E.B. Mawson & Sons Pty Ltd
 Broken Hill Laboratory
 1 Holten Drive Broken Hill NSW 2880
 Phone: (03) 5482 5368
 Email: bmaguire@mawsons.com.au

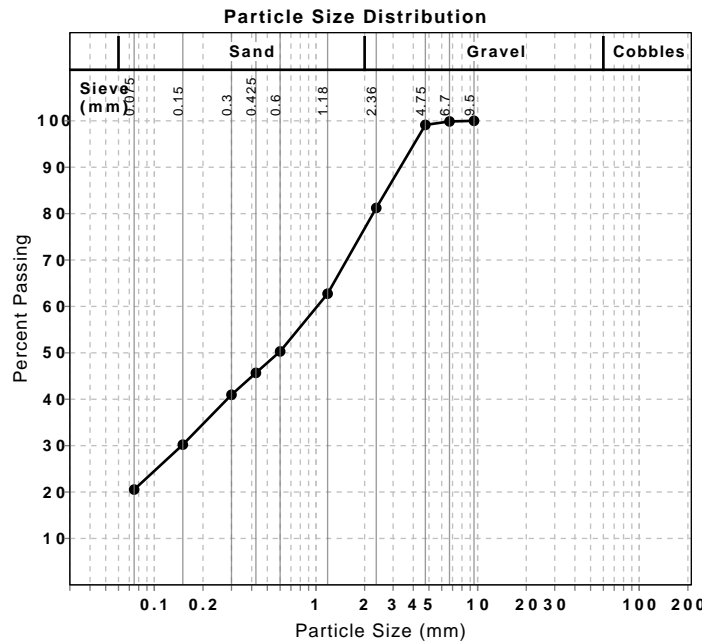


Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Bree Maguire
 Lab Technician

NATA Accredited Laboratory Number: 19567

Particle Size Distribution (AS1141.11.1)		
Sample Washing	Sample was Washed	
Sieve	Passed %	Passing Limits
9.5 mm	100	
6.7 mm	100	
4.75 mm	99	
2.36 mm	81	
1.18 mm	63	
0.6 mm	50	
0.425 mm	46	
0.3 mm	41	
0.15 mm	30	
0.075 mm	21	



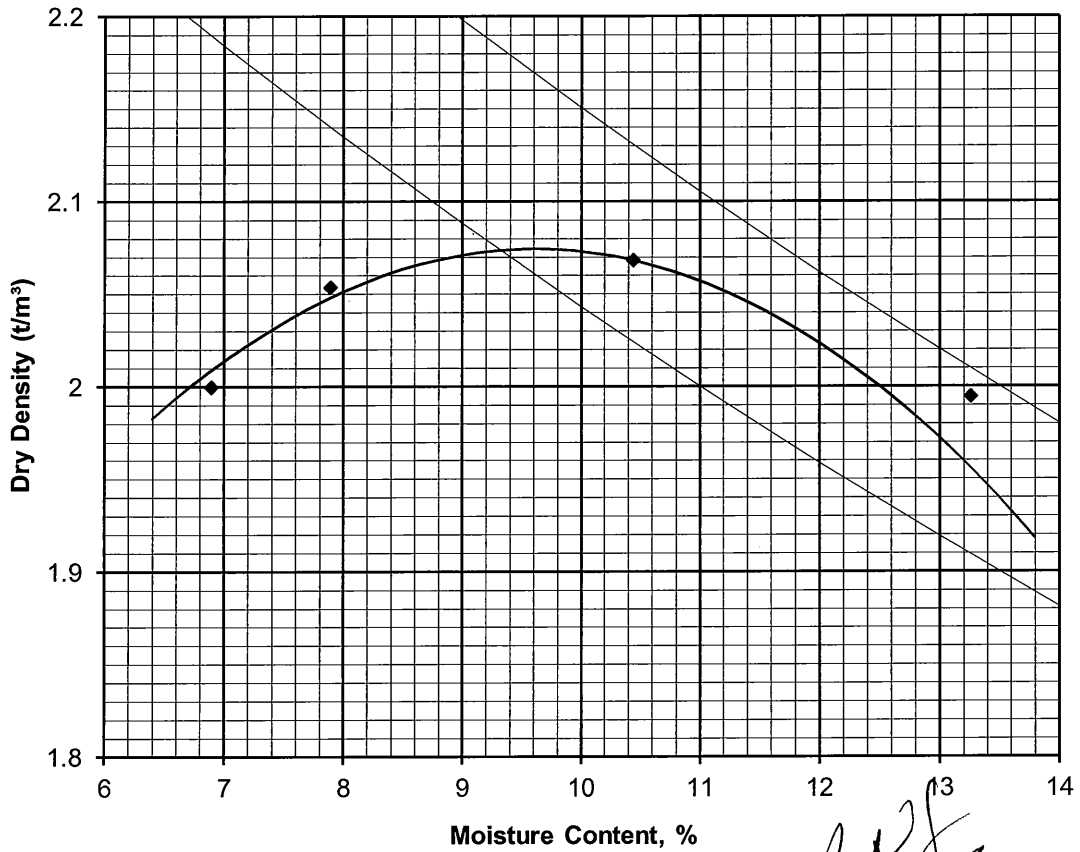


COMPACTION TEST

JOB No: 7144/758
SITE: Broken Hill Quarry
MATERIAL: BHQ Dust
STANDARD AS 1289 5.1.1
Material passing 19mm sieve: 100 %
Cured with water : 2 Hours

PAGE 1 of 1

DATE SAMPLED: N/S
MASS OF HAMMER: 2.7 kg
FALL: 300.0mm
No. of Blows : 25
No. of Layers : 3 Mould :A
Sample No. EC00080



(OMC) OPTIMUM MOISTURE CONTENT: 9.6 %
(MDD) MAXIMUM DRY DENSITY: 2.074 t/m³

P. W. Saunders
P. W. SAUNDERS
(Company Approved Signatory)

MDD & OMC are reported to 0.001 & 0.1 respectively as data is used for statistical purposes.

SAMPLING: As Received

This curve has been generated by a computer curve fitting EXCEL program as per AS 1289 5.1.1/5.2.1 Note 9
0 & 5% air voids lines plotted in accordance with AS 1289 5.1.1/5.2.1- 5.(d).

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Accreditation for compliance with ISO/IEC 17025.
NATA Accredited Laboratory Number: 353

Issue Date: 16/05/2017

Madsen, Sawara

From: Mathew Lees <mlees@mawsons.com.au>
Sent: Thursday, 17 December 2020 2:14 PM
To: admin@sgcompleteren.com
Cc: Drew Mashford; Jayden Bosch
Subject: RE: Council Development Application and Construction Certificate Application
Attachments: 20170522100845759.pdf; TestResult-57-320 (1).pdf

Hi Neville,

Thanks for the discussion late last week.

To provide you with some assistance per your below query, please find attached two test reports for the material you purchased;

1/ Particle Size Distribution

2/ Compaction Test – provides an indication of the material density and optimum moisture content

I hope this is of some assistance, and if you need anything further please don't hesitate to ask.

regards

Mathew Lees

General Manager - Technical | Mawsons

 *Please consider the environment before printing this email.*

From: Drew Mashford
Sent: Monday, 2 November 2020 9:38 AM
To: Mathew Lees <mlees@mawsons.com.au>
Subject: FW: Council Development Application and Construction Certificate Application

Drew Mashford

Logistics & Marketing Manager Broken Hill Region | Mawsons

 *Please consider the environment before printing this email.*

From: Admin <admin@sgcompleteren.com>
Sent: Saturday, 31 October 2020 1:29 PM
To: Drew Mashford <dmashford@mawsons.com.au>
Subject: Council Development Application and Construction Certificate Application

Hi

As discussed recently I have a current application before the council for a client to build an extension which requires some landfill below a concrete floor which is to be installed. We were proposing the same practice that has been used in Broken Hill for as long as I can remember where we fill with cracker dust purchased from your company over the existing concrete. The council has asked me to provide a

paragraph outlining the process of filling underneath the concrete and explaining how that process complies with AS2870-2011.

Can you please assist in this matter.

Kind regards

Neville Gasmier

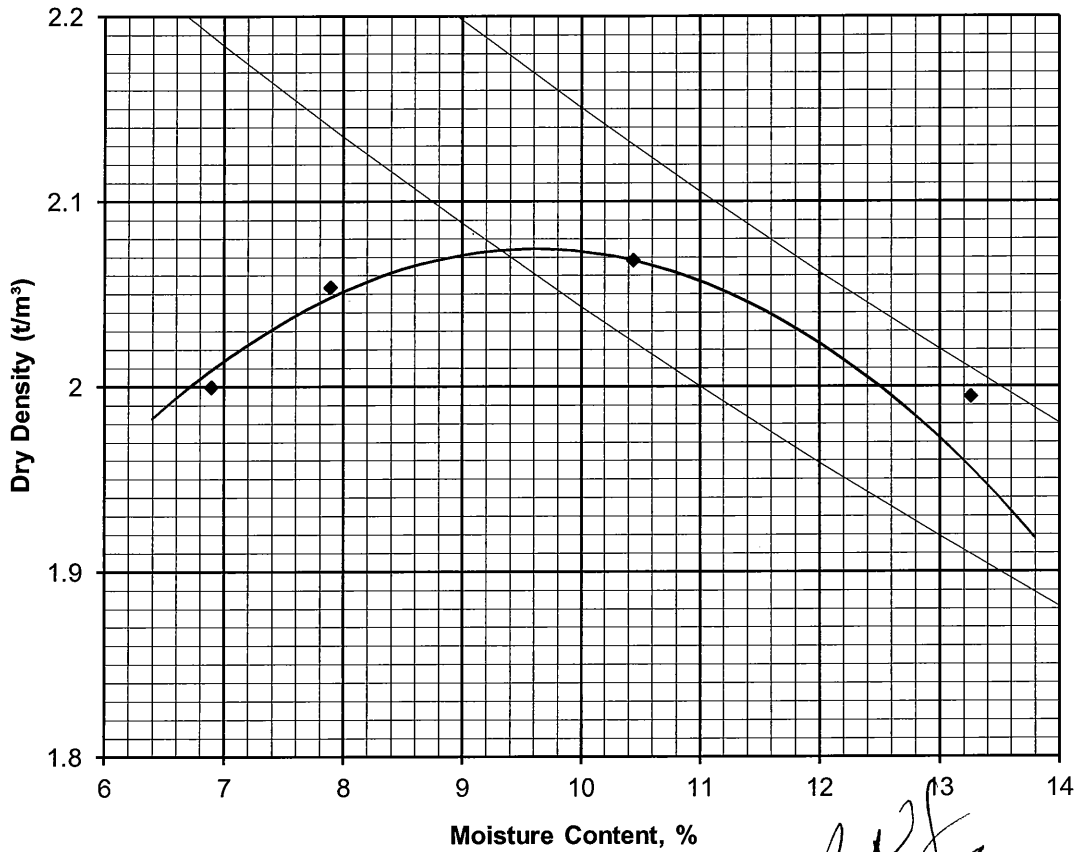
0407 487 752





COMPACTION TEST

JOB No:	7144/758	PAGE 1 of 1	DATE SAMPLED:	N/S
SITE:	Broken Hill Quarry		MASS OF HAMMER:	2.7 kg
MATERIAL:	BHQ Dust		FALL:	300.0mm
STANDARD	AS 1289 5.1.1		No. of Blows :	25
Material passing 19mm sieve:	100 %		No. of Layers :	3 Mould :A
Cured with water :	2 Hours		Sample No.	EC00080



(OMC) OPTIMUM MOISTURE CONTENT: 9.6 %
(MDD) MAXIMUM DRY DENSITY: 2.074 t/m³

P. W. Saunders
P. W. SAUNDERS
 (Company Approved Signatory)

MDD & OMC are reported to 0.001 & 0.1 respectively as data is used for statistical purposes.

SAMPLING: As Received

This curve has been generated by a computer curve fitting EXCEL program as per AS 1289 5.1.1/5.2.1 Note 9
0 & 5% air voids lines plotted in accordance with AS 1289 5.1.1/5.2.1- 5.(d).

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Accreditation for compliance with ISO/IEC 17025.
NATA Accredited Laboratory Number: 353

Issue Date: 16/05/2017

Material Test Report

Report Number: 57-320
Issue Number: 1
Date Issued: 27/11/2020
Client: MAWSONS QUARRY - BROKEN HILL (57)
 1 HOLTEN DRV, BROKEN HILL NSW 2880
Project Number: 57
Project Name: Construction Materials Testing
Work Request: 378
Sample Number: B20-378A
Date Sampled: 26/11/2020
Dates Tested: 26/11/2020 - 27/11/2020
Sampling Method: AS 1141.3.1 9.3 - Sampling aided by power equipment - with backblading
Sample Location: BHQ STOCKPILE
Material: Broken Hill - 5mm Dust - 5D



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E.B. Mawson & Sons Pty Ltd
 Broken Hill Laboratory
 1 Holten Drive Broken Hill NSW 2880
 Phone: (03) 5482 5368
 Email: bmaguire@mawsons.com.au

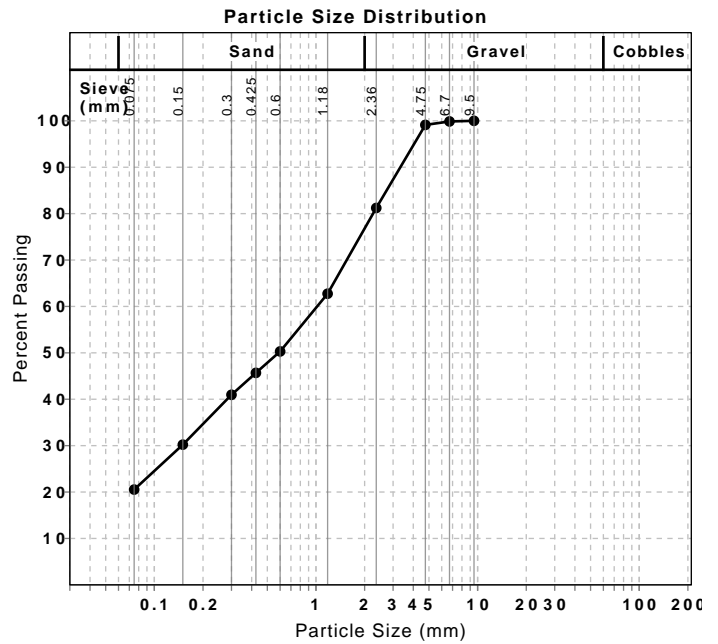


Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Bree Maguire
 Lab Technician

NATA Accredited Laboratory Number: 19567

Particle Size Distribution (AS1141.11.1)		
Sample Washing	Sample was Washed	
Sieve	Passed %	Passing Limits
9.5 mm	100	
6.7 mm	100	
4.75 mm	99	
2.36 mm	81	
1.18 mm	63	
0.6 mm	50	
0.425 mm	46	
0.3 mm	41	
0.15 mm	30	
0.075 mm	21	



DRAFT

Appendix G

Waste Disposal Documentation

Docket

Dublin - IWS

Lot 76, Port Wakefield Road

DUBLIN SA 5501

ABN : 23043564833

Docket : 150192276

Date : 14/01/22

Time : 09:14 - 09:29

Rego : XN82SK

PO # :

Hauler : 50083174

EPA # : 567531

Waste : CCLLCT

Desc : Low Level Contaminated Waste (LLCW)

BP : Galena Developments & Globe IBH

Gross : 26.320 t

Tare : 21.760 t

NET : 4.560 t



Signature:

8 December 2021

Natalie Leighton
Deputy Project Manager, Power Development
AGL

Dear Natalie

Waste Classification for petroleum hydrocarbon impacted material at 74-80 Pinnacles Place, Broken Hill, NSW

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by AGL Energy Limited (AGL) to prepare an Environmental Impact Statement (EIS) to assist with obtaining development consent to construct, operate and maintain a battery energy storage system (BESS) with a capacity of approximately 50 megawatts (MW) and up to 100 megawatt-hour (MWh) at Broken Hill (hereafter referred to as 'the Project'), NSW. The Site locality is shown on Figure F1 and Site boundary and layout is shown on Figure F2, Attachment A.

As part of the EIS submission, a Detailed Site Investigation and Assessment (DSI & Assessment)¹ was prepared to address the Secretary's Environmental Assessment Requirements (SEARs) and to support the State Significant Development (SSD) application for the Project. The DSI & Assessment concluded that localised petroleum hydrocarbon impacts in surface and subsurface soils at sample location identified as "Tank", currently preclude the suitability of the Site for ongoing commercial and/or industrial land use.

This letter includes the waste classification for the petroleum impacted material from the sample location identified as "Tank", in accordance with NSW EPA Guidelines², for off-site disposal to an appropriately licensed landfill.

2.0 Objectives

The objective of this letter is to provide a waste classification assessment for soils excavated from sample location identified as "Tank" during remedial works on 8 December 2021.

This report assesses the soil results from soil sampling conducted as part of the DSI & Assessment, where the samples were collected in January 2021, and provides a waste classification in accordance with NSW EPA guidelines.

3.0 Contaminants of Potential Concern

The contaminants of potential concern (CoPC) at the Site are those associated with the historical storage of vehicle fuels and oils in IBCs, drums and jerry cans, with evidence of staining in the vicinity of the IBC on the Site.

- Total Petroleum Hydrocarbons (TPH) / Total Recoverable Hydrocarbons (TRH)
- Polycyclic Aromatic Hydrocarbons (PAH)
- Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene (BTEXN) compounds
- Volatile Organic Compounds (VOCs)
- 8 metals (arsenic, chromium, copper, cadmium, nickel, lead, zinc and mercury)
- Asbestos.

¹ AECOM, 2021. Detailed Site Investigation & Assessment Report - Broken Hill Battery Energy Storage System Project, dated 21 May 2021

² NSW EPA (2014) Waste Classification Guidelines Part 1: Classifying Waste (NSW EPA 2014).

4.0 Methodology

4.1 Sample Rationale and Collection

On 14 January 2021, one sample location (Tank) was sampled for the purpose of land suitability and in-situ waste classification. Four primary soil samples were collected from between 0.0 and 0.4 m BGL (metres below ground level).

The soil samples were placed in an esky with crushed ice and samples were submitted to a primary (ALS) and secondary (Envirolab) laboratory with National Association of Testing Authorities (NATA) Australia accredited.

4.2 Quality Assurance and Quality Control

QA/QC samples were collected as part of the DSI & Assessment. The data validation procedure employed in the assessment of the field and laboratory QA / QC data indicated that the reported analytical results are representative of soil conditions at the sample locations investigated and that the overall quality of the analytical data produced was reliable for the purpose of the DSI & Assessment.

4.3 Soil Sample Analysis

All soil samples were analysed for all CoPCs identified in section 3.0.

4.4 Waste Classification Criteria

Soil analytical results reported in Table T3 (Attachment C) were compared to the NSW EPA (2014) Waste Classification Guidelines: Part 1 Classifying Waste threshold criteria, including:

- Contaminant Threshold (CT) criteria and specific contaminant concentration (SCC1) for General Solid Waste (GSW) (CT1).
- CT criteria and SCC2 for Restricted Solid Waste (RSW) (CT2).

5.0 Results

5.1 Observations

The logged soil conditions are presented on soil log in Attachment B of this letter.

The material observed during the investigation was described as clayey silt and extended to a maximum depth of 0.4 m NGL.

5.2 Analytical Results

Analytical results are presented in **Table T3** in **Attachment C**, whilst the laboratory reports are in **Attachment D**. From the analytical results, all analytical results for CoPC indicate that the material is classified as Hazardous Waste.

6.0 Conclusions

Based on the soil sampling observations, analytical data and QA/QC, it is concluded that the materials from the location identified as Tank is classified as **Hazardous Waste** and can be disposed off-site at an appropriate licensed landfill.

Yours faithfully,



Orla Ferguson
Associate Director
Orla.ferguson@aecom.com

Attachments:

Attachment A – Figures

Attachment B – Borelog

Attachment C – Tables

Attachment D – Laboratory Certificates

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Legend

- ✖ Project location
- Broken Hill City Council
- Main road
- Local road
- Railway
- Watercourse
- Park, forest, reserve
- Existing renewable energy generating project

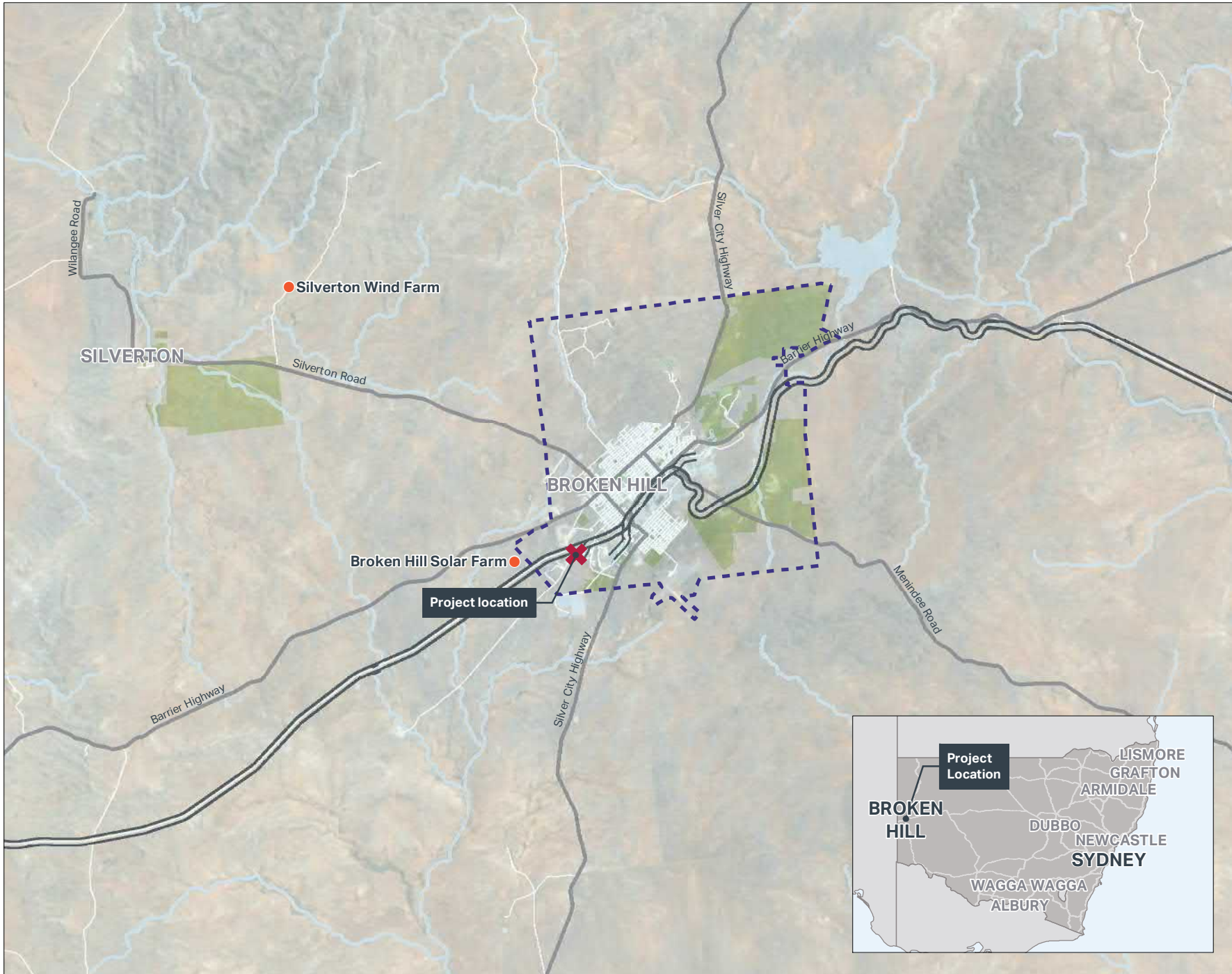


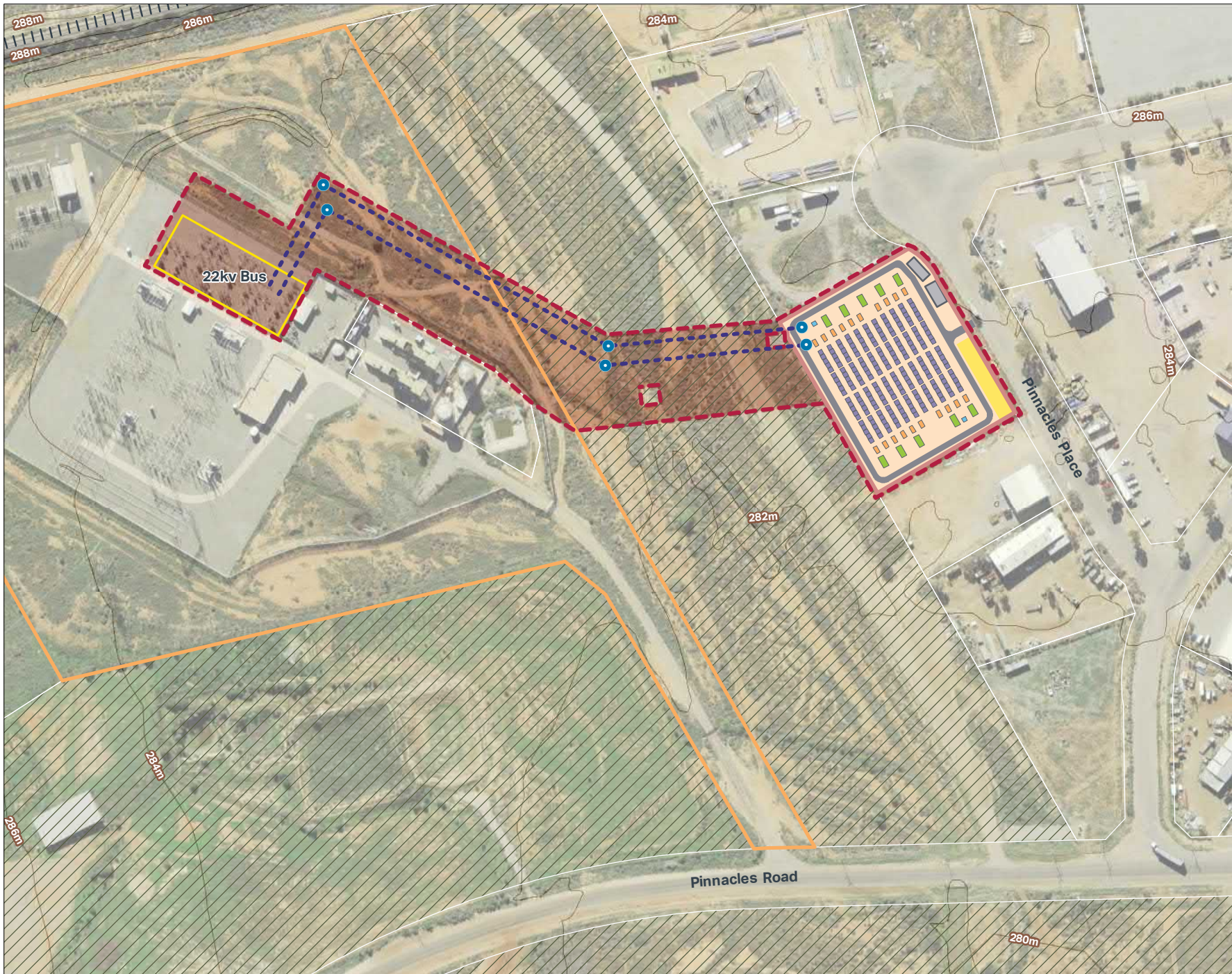
FIGURE A-1: SITE LOCALITY

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- Legend**
- Project Area
 - Site
 - TransGrid Broken Hill Substation
 - 22kV Bus
 - Commons
 - Railway
 - Contour
 - Indicative overhead transmission line
 - Indicative transmission line pole
- Site features**
- Office building
 - Battery
 - Inverter
 - Medium voltage auxiliary switchboards
 - Transformer
 - Laydown area/operational parking area
 - Access road
 - Permeable surface

FIGURE A-2: PROPOSED SITE LAYOUT

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Legend

- Project Area
- The Site
- Area identified for remedial works
- Indicative overhead transmission line
- Indicative transmission line pole
- ⊕ Borehole (AECOM, 2021)
- ⊕ Sample location (AECOM, 2021)
- ⊕ Stockpile (AECOM, 2021)



**FIGURE A-3:
BOREHOLE AND
SAMPLING LOCATIONS**

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Source: © Department of Customer Service 2020

Client: AGL	Project No: 60619153	Start Date: 14/01/2021
Project: AGL BESS	Logged by: MX	End Date: 14/01/2021
Location: Broken Hill, Southern corner of Site	Checked by: MC	Location Meth.: Map
Driller: Numac	Hole Diameter: 300 mm	Eastng: 539957 m
Drill Rig: Shovel	Inclination: -90°	Northing: 6460947 m
	Bearing: N/A	Hor. Proj/Dat: MGA94/GDA94-56M
		Surface: Clayey Silt

Field Data				Material Description			Soil Condition		Comments		
Method	Support	Ground Water	Field Tests	Reduced Level (m)	Depth (m)	Graphic Log	Classification Symbol	MATERIAL NAME: plasticity/particle characteristics, colour, secondary and other minor components, structure	Moisture Condition	Density / Consistency	Additional Observations (Geological Unit)
Shovel	None	NOT ENCOUNTERED		ES 0.0-0.1			ML	clayey SILT: low plasticity; red-brown; black staining, sheen present, hydrocarbon odour	D		ALLUVIAL SOIL
				ES 0.1-0.2				from 0.30 m: lightly stained black, clear sheen			
				ES 0.2-0.3				<i>Tank terminated at 0.40 m.</i>			
				ES 0.3-0.4				<i>Target depth</i>			
					0.5						
					1.0						
					1.5						
					2.0						
					2.5						
					3.0						
					3.5						
					4.0						
					4.5						
					5.0						
					5.5						
					6.0						
					6.5						
					7.0						
					7.5						
					8.0						

2019_ANZ_BOREHOLE_60619153_AGL_BESS_BROKEN_HILL.GPJ_AECOM_5-00AA_GLB 9.2.2021

Table T3
 Soil Analytical Results - Waste Classification
 Broken Hill Energy Storage System
 AGL Energy Limited



				Field_ID	BH001_0.0-0.1	BH002_0.0-0.3	BH003_0.0-0.1	BH003_0.5-0.6	BH003_0.7-0.8	BH004_0.0-0.3	BH005_0.0-0.1	BH005_0.4-0.5	
				Location_Code	BH001	BH002	BH003	BH003	BH003	BH004	BH005	BH005	
				Sample_Depth_Range	0-0.1	0-0.3	0-0.1	0.5-0.6	0.7-0.8	0-0.3	0-0.1	0.4-0.5	
				Sampled_Date_Time	13/01/2021	12/01/2021	12/01/2021	12/01/2021	12/01/2021	12/01/2021	13/01/2021	13/01/2021	
				Matrix_Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
				Lab_Report_Number	ES2101586	ES2101586	ES2101586	ES2101586	ES2101586	ES2101586	ES2101586	ES2101586	
Chem_Group	ChemName	output unit	LOR	NSW EPA 2014 General Solid Waste CT1 (No Leaching)	NSW EPA 2014 General Solid Waste SCC1 (with leached) - as amended 2016	NSW EPA 2014 Restricted Solid Waste CT2 (No Leaching)	NSW EPA 2014 Restricted Solid Waste SCC2 (with leached) - as amended 2016						
Halogenated Aliphatic Compounds	Bromochloromethane	mg/kg	1					-	-	-	-	-	-
	Dichlorodifluoromethane (Freon 12)	mg/kg	5					<5	<5	<5	<5	<5	<5
	Chloromethane	mg/kg	5					<5	<5	<5	<5	<5	<5
	Vinyl chloride	mg/kg	5	4	7.2	16	28.8	<5	<5	<5	<5	<5	<5
	Bromomethane	mg/kg	5					<5	<5	<5	<5	<5	<5
	Chloroethane	mg/kg	5					<5	<5	<5	<5	<5	<5
	Trichlorofluoromethane (Freon 11)	mg/kg	5					<5	<5	<5	<5	<5	<5
	1,1-Dichloroethene	mg/kg	0.5	14	0.7	56	100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Iodomethane	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1,1-Dichloroethane	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	cis-1,2-Dichloroethene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	trans-1,2-Dichloroethene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1,1,1-Trichloroethane	mg/kg	0.5	600	1080	2400	4320	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1,1-Dichloropropene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Carbon Tetrachloride	mg/kg	0.5	10	18	40	72	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1,2-Dichloroethane	mg/kg	0.5	10	0.5	40	72	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Trichloroethene	mg/kg	0.5	10	18	40	72	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dibromomethane	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1,1,2-Trichloroethane	mg/kg	0.5	24	43.2	96	172.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1,3-Dichloropropane	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Tetrachloroethene	mg/kg	0.5	14	25.2	56	100.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1,1,1,2-Tetrachloroethane	mg/kg	0.5	200	360	800	1440	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	trans-1,4-Dichloro-2-butene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	cis-1,4-Dichloro-2-butene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1,1,2,2-Tetrachloroethane	mg/kg	0.5	26	46.8	104	187.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	1,2,3-Trichloropropane	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachloroethane	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
1,2-Dibromo-3-chloropropane	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Hexachlorobutadiene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Fumigants	1,2-Dibromoethane (EDB)	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	
	1,2-Dichloropropane	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	
	2,2-Dichloropropane	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	
	cis-1,3-Dichloropropene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	
	trans-1,3-Dichloropropene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	
Trihalomethanes	Bromodichloromethane	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	
	Bromoform	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	
	Chloroform	mg/kg	0.5	120	126	480	864	<0.5	<0.5	<0.5	<0.5	<0.5	
	Dibromochloromethane	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	
Physico-Chemical Parameters	Moisture Content	%	1					16.2	11.5	8	14.8	12.1	17.6
	Exchangeable Sodium Percent	%	0.2					<0.2	<0.2	<0.2	8.3	6.6	3.8
Exchangeable Cations	Cation Exchange Capacity	meq/100g	0.2					9	13.8	7.2	13.2	11.9	14.7
	Exchangeable Calcium	meq/100g	0.2					8	12	6.7	8.8	8.3	11.2
	Exchangeable Magnesium	meq/100g	0.2					0.6	0.6	<0.2	3.3	2.8	1.9
	Exchangeable Potassium	meq/100g	0.2					0.4	1.2	0.5	<0.2	<0.2	1
	Exchangeable Sodium	meq/100g	0.2					<0.2	<0.2	<0.2	1.1	0.8	0.6
	Exchangeable Sodium	meq/100g	0.2					<0.2	<0.2	<0.2	1.1	0.8	0.6
Oxygenated Compounds	Vinyl acetate	mg/kg	5					<5	<5	<5	<5	<5	<5
	2-Butanone (MEK)	mg/kg	5	4000	7200	16000	28800	<5	<5	<5	<5	<5	<5
	2-hexanone (MBK)	mg/kg	5					<5	<5	<5	<5	<5	<5
	4-Methyl-2-pentanone (MIBK)	mg/kg	5					<5	<5	<5	<5	<5	<5
Sulfonated Compounds	Carbon disulfide	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	
Asbestos	APPROVED IDENTIFIER:	-	0.1					-	-	-	-	-	
	Asbestos fibres	-	0					0	0	0	0	0	
	Asbestos Type	-						Not detected	Not detected	Not detected	Not detected	Not detected	
	Organic Fibre	g/kg	0.1					0	0	0	0	0	
	Asbestos (Trace)	Fibres	5					0	0	0	0	0	
	Synthetic Mineral Fibre	g/kg	0.1					0	0	0	0	0	
Inorganics	Moisture Content (dried @ 103°C)	%	0.1					-	-	-	-	-	
	weight of sample	g	0.01					80.8	75.8	50.9	-	76.9	55.7

Table T3
 Soil Analytical Results - Waste Classification
 Broken Hill Energy Storage System
 AGL Energy Limited

				Field ID	BH006_0.0-0.1	BH006_0.2-0.3	Fragment_200114_200114	QC100_200112	QC200_200113	Tank_0.0-0.1	Tank_0.1-0.2	Tank_0.2-0.3	Tank_0.3-0.4
				Location Code	BH006	BH006	Fragment	BH004	BH005	Tank	Tank	Tank	Tank
				Sample Depth Range	0-0.1	0.2-0.3		0-0.3	0.4-0.5	0-0.1	0.1-0.2	0.2-0.3	0.3-0.4
				Sampled Date Time	14/01/2021	14/01/2021	14/01/2021	12/01/2021	13/01/2021	14/01/2021	14/01/2021	14/01/2021	14/01/2021
				Matrix Type	SOIL	SOIL	SOLID	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Lab Report Number	ES2101586	ES2101586	ES2101586	ES2101586	259778	ES2101586	ES2101586	ES2101586	ES2101586
Chem_Group	ChemName	output unit	LOR	NSW EPA 2014 General Solid Waste CT1 (No Leaching)	NSW EPA 2014 General Solid Waste SCC1 (with leached) - as amended 2016	NSW EPA 2014 Restricted Solid Waste CT2 (No Leaching)	NSW EPA 2014 Restricted Solid Waste SCC2 (with leached) - as amended 2016						
Halogenated Aliphatic Compounds	Bromochloromethane	mg/kg	1					-	-	-	-	-	-
	Dichlorodifluoromethane (Freon 12)	mg/kg	5					<5	<5	-	<5	<1	<5
	Chloromethane	mg/kg	5					<5	<5	-	<5	<1	<5
	Vinyl chloride	mg/kg	5	4	7.2	16	28.8	<5	<5	-	<5	<1	<5
	Bromomethane	mg/kg	5					<5	<5	-	<5	<1	<5
	Chloroethane	mg/kg	5					<5	<5	-	<5	<1	<5
	Trichlorofluoromethane (Freon 11)	mg/kg	5					<5	<5	-	<5	<1	<5
	1,1-Dichloroethene	mg/kg	0.5	14	0.7	56	100	<0.5	<0.5	-	<0.5	<1	<0.5
	Iodomethane	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	1,1-Dichloroethane	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	cis-1,2-Dichloroethene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	trans-1,2-Dichloroethene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	1,1,1-Trichloroethane	mg/kg	0.5	600	1080	2400	4320	<0.5	<0.5	-	<0.5	<1	<0.5
	1,1-Dichloropropene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	Carbon Tetrachloride	mg/kg	0.5	10	18	40	72	<0.5	<0.5	-	<0.5	<1	<0.5
	1,2-Dichloroethane	mg/kg	0.5	10	0.5	40	72	<0.5	<0.5	-	<0.5	<1	<0.5
	Trichloroethene	mg/kg	0.5	10	18	40	72	<0.5	<0.5	-	<0.5	<1	<0.5
	Dibromomethane	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	1,1,2-Trichloroethane	mg/kg	0.5	24	43.2	96	172.8	<0.5	<0.5	-	<0.5	<1	<0.5
	1,3-Dichloropropane	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	Tetrachloroethene	mg/kg	0.5	14	25.2	56	100.8	<0.5	<0.5	-	<0.5	<1	<0.5
1,1,1,2-Tetrachloroethane	mg/kg	0.5	200	360	800	1440	<0.5	<0.5	-	<0.5	<1	<0.5	
trans-1,4-Dichloro-2-butene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5	
cis-1,4-Dichloro-2-butene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5	
1,1,2,2-Tetrachloroethane	mg/kg	0.5	26	46.8	104	187.2	<0.5	<0.5	-	<0.5	<1	<0.5	
1,2,3-Trichloropropane	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5	
Pentachloroethane	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5	
1,2-Dibromo-3-chloropropane	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5	
Hexachlorobutadiene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5	
Fumigants	1,2-Dibromoethane (EDB)	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	1,2-Dichloropropane	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	2,2-Dichloropropane	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	cis-1,3-Dichloropropene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	trans-1,3-Dichloropropene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
Trihalomethanes	Bromodichloromethane	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	Bromoform	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	Chloroform	mg/kg	0.5	120	126	480	864	<0.5	<0.5	-	<0.5	<1	<0.5
	Dibromochloromethane	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
Physico-Chemical Parameters	Moisture Content	%	1					10	12.1	-	17.2	-	2.3
	Exchangeable Sodium Percent	%	0.2					5.8	7.8	-	-	-	14.9
	Cation Exchange Capacity	meq/100g	0.2					8.2	7	-	-	-	4.3
	Exchangeable Calcium	meq/100g	0.2					5.9	5.3	-	-	-	3.1
	Exchangeable Magnesium	meq/100g	0.2					1.2	1.2	-	-	-	0.5
	Exchangeable Potassium	meq/100g	0.2					0.5	<0.2	-	-	-	<0.2
Oxygenated Compounds	Exchangeable Sodium	meq/100g	0.2					0.5	0.5	-	-	-	0.6
	Vinyl acetate	mg/kg	5					<5	<5	-	<5	<1	<5
	2-Butanone (MEK)	mg/kg	5	4000	7200	16000	28800	<5	<5	-	<5	<1	<5
	2-hexanone (MBK)	mg/kg	5					<5	<5	-	<5	<1	<5
Sulfonated Compounds	4-Methyl-2-pentanone (MIBK)	mg/kg	5					<5	<5	-	<5	<1	<5
Asbestos	Carbon disulfide	mg/kg	0.5					<0.5	<0.5	-	<0.5	<1	<0.5
	APPROVED IDENTIFIER:	-						-	-	-	-	-	-
	Asbestos fibres	-	0.1					0	-	-	-	-	-
	Asbestos Type	-						Not detected	-	-	-	-	-
	Organic Fibre	g/kg	0.1					0	-	-	-	-	-
	Asbestos (Trace)	Fibres	5					0	-	-	-	-	-
Inorganics	Synthetic Mineral Fibre	g/kg	0.1					0	-	-	-	-	-
	Moisture Content (dried @ 103°C)	%	0.1					-	-	-	-	-	-
Un-assigned	weight of sample	g	0.01					81.5	-	-	-	-	
									57.6	-	-	-	-

CERTIFICATE OF ANALYSIS

Work Order : **ES2101586**
Client : **AECOM Australia Pty Ltd**
Contact : KATE HOLT
Address : LEVEL 21 420 GEORGE STREET
 SYDNEY NSW, AUSTRALIA 2000

Telephone : ----
Project : 60619153/2g
Order number : 60619153/2g
C-O-C number : ----
Sampler : Pankti Dalal
Site : AGL BLESS BH
Quote number : EN/004/20
No. of samples received : 22
No. of samples analysed : 22

Page : 1 of 27
Laboratory : Environmental Division Sydney
Contact : Brenda Hong
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 2 8784 8555
Date Samples Received : 15-Jan-2021 18:20
Date Analysis Commenced : 19-Jan-2021
Issue Date : 22-Jan-2021 17:47



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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Ashesh Patel	Senior Chemist	Sydney Inorganics, Smithfield, NSW
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

- ALS is not NATA accredited for the analysis of Exchangeable Cations on Alkaline Soils when performed under ALS Method ED006.
- 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.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Sum of chlorinated hydrocarbons includes carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, vinyl chloride, hexachlorobutadiene and methylene chloride.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG020: Copper and Zinc results for samples ES2101586-#002 confirmed by re-digestion and reanalysis.
- **EA200 Legend**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EP080: The trip spike and its control have been analysed for volatile TPH and BTEXN only. The trip spike and control were prepared in the lab using reagent grade sand spiked with petrol. The spike was dispatched from the lab and the control retained.
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H+ + Al3+).
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.



- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
 - EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.
 - EA200: N/A - Not Applicable
-



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC100_200112	QC400_200114 TB	QC500_200114 TS	Tank_0.0-0.1	Tank_0.1-0.2
Sampling date / time				12-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-004	ES2101586-005	ES2101586-006	ES2101586-008	ES2101586-009	
				Result	Result	Result	Result	Result	
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit	----	----	----	8.2	8.3	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	17.2	----	----	2.3	22.8	
ED006: Exchangeable Cations on Alkaline Soils									
Exchangeable Calcium	----	0.2	meq/100g	----	----	----	3.1	7.0	
Exchangeable Magnesium	----	0.2	meq/100g	----	----	----	0.5	2.4	
Exchangeable Potassium	----	0.2	meq/100g	----	----	----	<0.2	0.6	
Exchangeable Sodium	----	0.2	meq/100g	----	----	----	0.6	1.3	
Cation Exchange Capacity	----	0.2	meq/100g	----	----	----	4.3	11.2	
Exchangeable Sodium Percent	----	0.2	%	----	----	----	14.9	11.7	
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	5	----	----	<5	<5	
Cadmium	7440-43-9	1	mg/kg	<1	----	----	<1	<1	
Chromium	7440-47-3	2	mg/kg	16	----	----	12	12	
Copper	7440-50-8	5	mg/kg	17	----	----	16	14	
Lead	7439-92-1	5	mg/kg	9	----	----	50	13	
Nickel	7440-02-0	2	mg/kg	12	----	----	9	9	
Zinc	7440-66-6	5	mg/kg	30	----	----	345	48	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	<0.1	<0.1	
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	<5	----	----	<5	<5	
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	----	----	<5	<5	
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	----	----	<5	<5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC100_200112	QC400_200114 TB	QC500_200114 TS	Tank_0.0-0.1	Tank_0.1-0.2
Sampling date / time				12-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-004	ES2101586-005	ES2101586-006	ES2101586-008	ES2101586-009	
				Result	Result	Result	Result	Result	
EP074B: Oxygenated Compounds - Continued									
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	----	----	<5	<5	
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	----	----	<5	<5	
Chloromethane	74-87-3	5	mg/kg	<5	----	----	<5	<5	
Vinyl chloride	75-01-4	5	mg/kg	<5	----	----	<5	<5	
Bromomethane	74-83-9	5	mg/kg	<5	----	----	<5	<5	
Chloroethane	75-00-3	5	mg/kg	<5	----	----	<5	<5	
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	----	----	<5	<5	
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Iodomethane	74-88-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC100_200112	QC400_200114 TB	QC500_200114 TS	Tank_0.0-0.1	Tank_0.1-0.2
Sampling date / time				12-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-004	ES2101586-005	ES2101586-006	ES2101586-008	ES2101586-009	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Bromoform	75-25-2	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg	<1	----	----	<1	<1	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	<0.5	<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	1.6	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	



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				QC100_200112	QC400_200114 TB	QC500_200114 TS	Tank_0.0-0.1	Tank_0.1-0.2
Sampling date / time				12-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00
Compound	CAS Number	LOR	Unit	ES2101586-004	ES2101586-005	ES2101586-006	ES2101586-008	ES2101586-009
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	<0.5	<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	----	----	2.1	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
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	73	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	270	440
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	40400	13200
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	30600	9130
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	71300	22800
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	88	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	39	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	1240	1320
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	63600	19600
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	12500	3580
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	77300	24500
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	1240	1320
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.4	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	21.3	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	3.3	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	16.7	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	7.0	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	48.7	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	23.7	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP074S: VOC Surrogates								



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Sample ID

				QC100_200112	QC400_200114 TB	QC500_200114 TS	Tank_0.0-0.1	Tank_0.1-0.2
Sampling date / time				12-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00	14-Jan-2021 00:00
Compound	CAS Number	LOR	Unit	ES2101586-004	ES2101586-005	ES2101586-006	ES2101586-008	ES2101586-009
				Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued								
1,2-Dichloroethane-D4	17060-07-0	0.5	%	84.3	----	----	110	104
Toluene-D8	2037-26-5	0.5	%	87.9	----	----	112	108
4-Bromofluorobenzene	460-00-4	0.5	%	83.9	----	----	102	99.1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	97.2	----	----	95.4	90.3
2-Chlorophenol-D4	93951-73-6	0.5	%	94.7	----	----	90.1	84.6
2,4,6-Tribromophenol	118-79-6	0.5	%	79.3	----	----	90.0	86.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	96.2	----	----	99.8	91.6
Anthracene-d10	1719-06-8	0.5	%	92.5	----	----	87.0	96.5
4-Terphenyl-d14	1718-51-0	0.5	%	77.1	----	----	96.2	121
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	84.0	111	101	115	108
Toluene-D8	2037-26-5	0.2	%	83.4	108	102	109	104
4-Bromofluorobenzene	460-00-4	0.2	%	86.6	115	104	112	110



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Tank_0.2-0.3	Tank_0.3-0.4	BH003_0.0-0.1	BH003_0.5-0.6	BH003_0.7-0.8
Sampling date / time				14-Jan-2021 00:00	14-Jan-2021 00:00	12-Jan-2021 00:00	12-Jan-2021 00:00	12-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-010	ES2101586-011	ES2101586-012	ES2101586-013	ES2101586-014	
				Result	Result	Result	Result	Result	
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit	8.3	8.2	8.4	8.7	8.6	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	10.8	15.6	8.0	14.8	12.1	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	----	----	
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	----	----	
Asbestos Type	1332-21-4	-	--	----	----	-	----	----	
Sample weight (dry)	----	0.01	g	----	----	50.9	----	----	
APPROVED IDENTIFIER:	----	-	--	----	----	B.SCHRADER	----	----	
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	No	----	----	
Organic Fibre	----	0.1	g/kg	----	----	No	----	----	
ED006: Exchangeable Cations on Alkaline Soils									
Exchangeable Calcium	----	0.2	meq/100g	7.6	10.5	6.7	8.8	8.3	
Exchangeable Magnesium	----	0.2	meq/100g	2.8	2.6	<0.2	3.3	2.8	
Exchangeable Potassium	----	0.2	meq/100g	0.6	<0.2	0.5	<0.2	<0.2	
Exchangeable Sodium	----	0.2	meq/100g	1.7	2.4	<0.2	1.1	0.8	
Cation Exchange Capacity	----	0.2	meq/100g	12.7	15.6	7.2	13.2	11.9	
Exchangeable Sodium Percent	----	0.2	%	13.4	15.2	<0.2	8.3	6.6	
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	6	6	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	14	10	12	11	13	
Copper	7440-50-8	5	mg/kg	18	12	15	14	16	
Lead	7439-92-1	5	mg/kg	11	8	13	6	12	
Nickel	7440-02-0	2	mg/kg	11	8	9	8	10	
Zinc	7440-66-6	5	mg/kg	53	38	35	22	36	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Tank_0.2-0.3	Tank_0.3-0.4	BH003_0.0-0.1	BH003_0.5-0.6	BH003_0.7-0.8
Sampling date / time				14-Jan-2021 00:00	14-Jan-2021 00:00	12-Jan-2021 00:00	12-Jan-2021 00:00	12-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-010	ES2101586-011	ES2101586-012	ES2101586-013	ES2101586-014	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	<5	<5	<5	
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	<5	
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	<5	<5	<5	
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	<5	<5	<5	
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	<5	<5	<5	
Chloromethane	74-87-3	5	mg/kg	<5	<5	<5	<5	<5	
Vinyl chloride	75-01-4	5	mg/kg	<5	<5	<5	<5	<5	
Bromomethane	74-83-9	5	mg/kg	<5	<5	<5	<5	<5	
Chloroethane	75-00-3	5	mg/kg	<5	<5	<5	<5	<5	
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	<5	<5	<5	
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Tank_0.2-0.3	Tank_0.3-0.4	BH003_0.0-0.1	BH003_0.5-0.6	BH003_0.7-0.8
Sampling date / time				14-Jan-2021 00:00	14-Jan-2021 00:00	12-Jan-2021 00:00	12-Jan-2021 00:00	12-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-010	ES2101586-011	ES2101586-012	ES2101586-013	ES2101586-014	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Tank_0.2-0.3	Tank_0.3-0.4	BH003_0.0-0.1	BH003_0.5-0.6	BH003_0.7-0.8
Sampling date / time				14-Jan-2021 00:00	14-Jan-2021 00:00	12-Jan-2021 00:00	12-Jan-2021 00:00	12-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-010	ES2101586-011	ES2101586-012	ES2101586-013	ES2101586-014	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Pyrene	129-00-0	0.5	mg/kg	0.9	<0.5	<0.5	<0.5	<0.5	
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<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	<0.5	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<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	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<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	<0.5	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	0.9	<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	<0.5	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	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	1.2	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	
C10 - C14 Fraction	----	50	mg/kg	530	90	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	20300	3860	<100	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	14800	2850	<100	<100	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	35600	6800	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	1560	360	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	30900	5900	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	6230	1150	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	38700	7410	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	1560	360	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Tank_0.2-0.3	Tank_0.3-0.4	BH003_0.0-0.1	BH003_0.5-0.6	BH003_0.7-0.8
Sampling date / time				14-Jan-2021 00:00	14-Jan-2021 00:00	12-Jan-2021 00:00	12-Jan-2021 00:00	12-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-010	ES2101586-011	ES2101586-012	ES2101586-013	ES2101586-014	
				Result	Result	Result	Result	Result	
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	104	104	101	99.4	95.9	
Toluene-D8	2037-26-5	0.5	%	109	110	107	106	100	
4-Bromofluorobenzene	460-00-4	0.5	%	98.9	98.4	97.2	99.2	96.3	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	107	111	109	107	115	
2-Chlorophenol-D4	93951-73-6	0.5	%	91.7	104	92.5	93.0	95.6	
2,4,6-Tribromophenol	118-79-6	0.5	%	79.4	82.4	76.2	69.5	78.4	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	84.8	88.1	82.6	92.1	96.2	
Anthracene-d10	1719-06-8	0.5	%	97.6	102	106	104	107	
4-Terphenyl-d14	1718-51-0	0.5	%	126	96.4	88.7	84.5	89.0	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	109	108	106	103	100	
Toluene-D8	2037-26-5	0.2	%	106	107	103	102	97.3	
4-Bromofluorobenzene	460-00-4	0.2	%	109	111	110	111	109	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH002_0.0-0.3	BH004_0.0-0.3	BH005_0.0-0.1	BH005_0.4-0.5	BH006_0.0-0.1
Sampling date / time				12-Jan-2021 00:00	12-Jan-2021 00:00	13-Jan-2021 00:00	13-Jan-2021 00:00	14-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-015	ES2101586-016	ES2101586-017	ES2101586-018	ES2101586-019	
				Result	Result	Result	Result	Result	
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit	8.5	9.1	8.8	8.6	8.6	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	11.5	17.6	9.9	17.6	10.0	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	----	No	
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	No	----	No	
Asbestos Type	1332-21-4	-	--	-	-	-	----	-	
Sample weight (dry)	----	0.01	g	75.8	76.9	55.7	----	81.5	
APPROVED IDENTIFIER:	----	-	--	B.SCHRADER	B.SCHRADER	B.SCHRADER	----	B.SCHRADER	
Synthetic Mineral Fibre	----	0.1	g/kg	No	No	No	----	No	
Organic Fibre	----	0.1	g/kg	No	No	No	----	No	
ED006: Exchangeable Cations on Alkaline Soils									
Exchangeable Calcium	----	0.2	meq/100g	12.0	11.2	6.4	8.5	5.9	
Exchangeable Magnesium	----	0.2	meq/100g	0.6	1.9	0.9	2.4	1.2	
Exchangeable Potassium	----	0.2	meq/100g	1.2	1.0	0.7	<0.2	0.5	
Exchangeable Sodium	----	0.2	meq/100g	<0.2	0.6	<0.2	0.8	0.5	
Cation Exchange Capacity	----	0.2	meq/100g	13.8	14.7	8.0	11.7	8.2	
Exchangeable Sodium Percent	----	0.2	%	<0.2	3.8	<0.2	7.0	5.8	
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	6	6	5	<5	7	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	17	16	12	11	10	
Copper	7440-50-8	5	mg/kg	17	18	15	13	21	
Lead	7439-92-1	5	mg/kg	15	10	82	6	30	
Nickel	7440-02-0	2	mg/kg	12	12	9	9	11	
Zinc	7440-66-6	5	mg/kg	37	32	190	21	62	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH002_0.0-0.3	BH004_0.0-0.3	BH005_0.0-0.1	BH005_0.4-0.5	BH006_0.0-0.1
Sampling date / time				12-Jan-2021 00:00	12-Jan-2021 00:00	13-Jan-2021 00:00	13-Jan-2021 00:00	14-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-015	ES2101586-016	ES2101586-017	ES2101586-018	ES2101586-019	
				Result	Result	Result	Result	Result	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	<5	<5	<5	
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	<5	<5	<5	
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	<5	<5	<5	
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	<5	<5	<5	
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	<5	<5	<5	
Chloromethane	74-87-3	5	mg/kg	<5	<5	<5	<5	<5	
Vinyl chloride	75-01-4	5	mg/kg	<5	<5	<5	<5	<5	
Bromomethane	74-83-9	5	mg/kg	<5	<5	<5	<5	<5	
Chloroethane	75-00-3	5	mg/kg	<5	<5	<5	<5	<5	
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	<5	<5	<5	
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH002_0.0-0.3	BH004_0.0-0.3	BH005_0.0-0.1	BH005_0.4-0.5	BH006_0.0-0.1
Sampling date / time				12-Jan-2021 00:00	12-Jan-2021 00:00	13-Jan-2021 00:00	13-Jan-2021 00:00	14-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-015	ES2101586-016	ES2101586-017	ES2101586-018	ES2101586-019	
				Result	Result	Result	Result	Result	
EP074E: Halogenated Aliphatic Compounds - Continued									
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH002_0.0-0.3	BH004_0.0-0.3	BH005_0.0-0.1	BH005_0.4-0.5	BH006_0.0-0.1
Sampling date / time				12-Jan-2021 00:00	12-Jan-2021 00:00	13-Jan-2021 00:00	13-Jan-2021 00:00	14-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-015	ES2101586-016	ES2101586-017	ES2101586-018	ES2101586-019	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<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	<0.5	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<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	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<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	<0.5	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<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	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<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	0.6	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH002_0.0-0.3	BH004_0.0-0.3	BH005_0.0-0.1	BH005_0.4-0.5	BH006_0.0-0.1
Sampling date / time				12-Jan-2021 00:00	12-Jan-2021 00:00	13-Jan-2021 00:00	13-Jan-2021 00:00	14-Jan-2021 00:00	
Compound	CAS Number	LOR	Unit	ES2101586-015	ES2101586-016	ES2101586-017	ES2101586-018	ES2101586-019	
				Result	Result	Result	Result	Result	
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	97.3	98.7	78.1	95.6	100.0	
Toluene-D8	2037-26-5	0.5	%	103	103	81.2	97.2	101	
4-Bromofluorobenzene	460-00-4	0.5	%	97.2	97.1	83.1	92.6	94.0	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	112	112	107	104	100	
2-Chlorophenol-D4	93951-73-6	0.5	%	100	100	94.5	92.4	92.0	
2,4,6-Tribromophenol	118-79-6	0.5	%	82.0	80.9	75.5	70.1	72.9	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	99.5	92.2	90.4	88.1	88.9	
Anthracene-d10	1719-06-8	0.5	%	109	104	96.7	99.8	100	
4-Terphenyl-d14	1718-51-0	0.5	%	88.6	81.8	88.1	74.0	86.3	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	101	103	81.2	99.9	104	
Toluene-D8	2037-26-5	0.2	%	100	99.5	78.1	94.0	97.6	
4-Bromofluorobenzene	460-00-4	0.2	%	107	109	84.1	104	106	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH006_0.2-0.3	BH001_0.0-0.1	TSC	----	----
Sampling date / time				14-Jan-2021 00:00	13-Jan-2021 00:00	11-Jan-2021 00:00	----	----	
Compound	CAS Number	LOR	Unit	ES2101586-020	ES2101586-021	ES2101586-022	-----	-----	
				Result	Result	Result	----	----	
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit	8.8	8.7	----	----	----	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	12.1	16.2	----	----	----	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	----	----	----	
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	----	----	----	
Asbestos Type	1332-21-4	-	--	----	-	----	----	----	
Sample weight (dry)	----	0.01	g	----	80.8	----	----	----	
APPROVED IDENTIFIER:	----	-	--	----	B.SCHRADER	----	----	----	
Synthetic Mineral Fibre	----	0.1	g/kg	----	No	----	----	----	
Organic Fibre	----	0.1	g/kg	----	No	----	----	----	
ED006: Exchangeable Cations on Alkaline Soils									
Exchangeable Calcium	----	0.2	meq/100g	5.3	8.0	----	----	----	
Exchangeable Magnesium	----	0.2	meq/100g	1.2	0.6	----	----	----	
Exchangeable Potassium	----	0.2	meq/100g	<0.2	0.4	----	----	----	
Exchangeable Sodium	----	0.2	meq/100g	0.5	<0.2	----	----	----	
Cation Exchange Capacity	----	0.2	meq/100g	7.0	9.0	----	----	----	
Exchangeable Sodium Percent	----	0.2	%	7.8	<0.2	----	----	----	
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	8	6	----	----	----	
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----	
Chromium	7440-47-3	2	mg/kg	14	18	----	----	----	
Copper	7440-50-8	5	mg/kg	27	21	----	----	----	
Lead	7439-92-1	5	mg/kg	88	20	----	----	----	
Nickel	7440-02-0	2	mg/kg	14	11	----	----	----	
Zinc	7440-66-6	5	mg/kg	254	54	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH006_0.2-0.3	BH001_0.0-0.1	TSC	----	----
Sampling date / time				14-Jan-2021 00:00	13-Jan-2021 00:00	11-Jan-2021 00:00	----	----	
Compound	CAS Number	LOR	Unit	ES2101586-020	ES2101586-021	ES2101586-022	-----	-----	
				Result	Result	Result	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	----	----	----	
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	----	----	----	
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	----	----	----	
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	----	----	----	
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074D: Fumigants									
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	----	----	----	
Chloromethane	74-87-3	5	mg/kg	<5	<5	----	----	----	
Vinyl chloride	75-01-4	5	mg/kg	<5	<5	----	----	----	
Bromomethane	74-83-9	5	mg/kg	<5	<5	----	----	----	
Chloroethane	75-00-3	5	mg/kg	<5	<5	----	----	----	
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	----	----	----	
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----	
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH006_0.2-0.3	BH001_0.0-0.1	TSC	----	----
Sampling date / time				14-Jan-2021 00:00	13-Jan-2021 00:00	11-Jan-2021 00:00	----	----	
Compound	CAS Number	LOR	Unit	ES2101586-020	ES2101586-021	ES2101586-022	-----	-----	
				Result	Result	Result	----	----	
EP074E: Halogenated Aliphatic Compounds - Continued									
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	----	----	----	
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
1.3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1.4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
1.2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1.2.4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
1.2.3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074G: Trihalomethanes									
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	----	----	----	
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	----	----	----	
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	----	----	----	
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg	<1	<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	----	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH006_0.2-0.3	BH001_0.0-0.1	TSC	----	----
Sampling date / time				14-Jan-2021 00:00	13-Jan-2021 00:00	11-Jan-2021 00:00	----	----	
Compound	CAS Number	LOR	Unit	ES2101586-020	ES2101586-021	ES2101586-022	-----	-----	
				Result	Result	Result	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	77	----	----	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	92	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	42	----	----	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.4	----	----	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	22.4	----	----	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH006_0.2-0.3	BH001_0.0-0.1	TSC	----	----
Sampling date / time				14-Jan-2021 00:00	13-Jan-2021 00:00	11-Jan-2021 00:00	----	----	
Compound	CAS Number	LOR	Unit	ES2101586-020	ES2101586-021	ES2101586-022	-----	-----	
				Result	Result	Result	----	----	
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	3.4	----	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	17.1	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	7.1	----	----	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	50.4	----	----	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	24.2	----	----	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%	100	64.7	----	----	----	
Toluene-D8	2037-26-5	0.5	%	103	92.1	----	----	----	
4-Bromofluorobenzene	460-00-4	0.5	%	96.4	93.2	----	----	----	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%	94.2	100.0	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.5	%	87.2	104	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.5	%	70.9	65.2	----	----	----	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%	85.8	100	----	----	----	
Anthracene-d10	1719-06-8	0.5	%	96.9	97.0	----	----	----	
4-Terphenyl-d14	1718-51-0	0.5	%	79.3	97.1	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%	104	84.3	106	----	----	
Toluene-D8	2037-26-5	0.2	%	100	90.8	104	----	----	
4-Bromofluorobenzene	460-00-4	0.2	%	107	96.1	104	----	----	



Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)			Sample ID	Fragment_200114_20 0114	----	----	----	----
			Sampling date / time	14-Jan-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2101586-007	-----	-----	-----	-----
				Result	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos Type	1332-21-4	-	--	-	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	No	----	----	----	----
Sample weight (dry)	----	0.01	g	57.6	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	No	----	----	----	----
Organic Fibre	----	0.1	g/kg	Yes	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC300_210112	QC301_210113	QC302_200114	----	----
Sampling date / time				12-Jan-2021 00:00	13-Jan-2021 00:00	14-Jan-2021 00:00	----	----	
Compound	CAS Number	LOR	Unit	ES2101586-001	ES2101586-002	ES2101586-003	-----	-----	
				Result	Result	Result	----	----	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	0.004	<0.001	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	0.018	<0.005	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----	
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<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	<100	<100	----	----	
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<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	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC300_210112	QC301_210113	QC302_200114	----	----
Sampling date / time					12-Jan-2021 00:00	13-Jan-2021 00:00	14-Jan-2021 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2101586-001	ES2101586-002	ES2101586-003	-----	-----	
				Result	Result	Result	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	111	103	102	----	----	
Toluene-D8	2037-26-5	2	%	104	105	102	----	----	
4-Bromofluorobenzene	460-00-4	2	%	103	102	99.8	----	----	

Analytical Results

Descriptive Results

Sub-Matrix: SOIL		
Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	BH003_0.0-0.1 - 12-Jan-2021 00:00	Mid-brown soil.
EA200: Description	BH002_0.0-0.3 - 12-Jan-2021 00:00	Mid-brown soil.
EA200: Description	BH004_0.0-0.3 - 12-Jan-2021 00:00	Mid-brown soil.
EA200: Description	BH005_0.0-0.1 - 13-Jan-2021 00:00	Mid-brown soil.
EA200: Description	BH006_0.0-0.1 - 14-Jan-2021 00:00	Mid-brown soil.
EA200: Description	BH001_0.0-0.1 - 13-Jan-2021 00:00	Mid-brown soil.

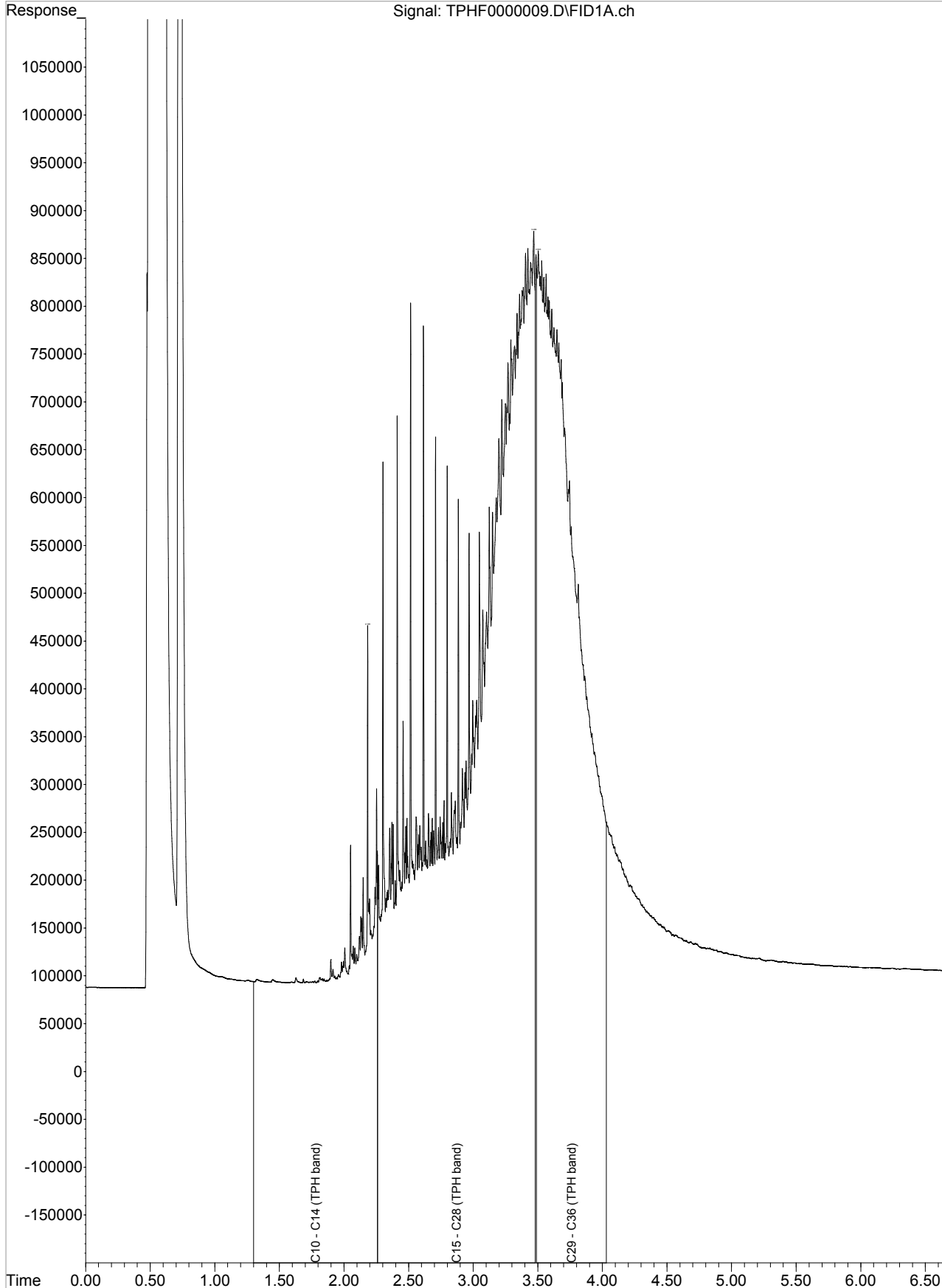
Sub-Matrix: SOLID		
Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	Fragment_200114_200114 - 14-Jan-2021 00:00	A collection of cement sheeting.



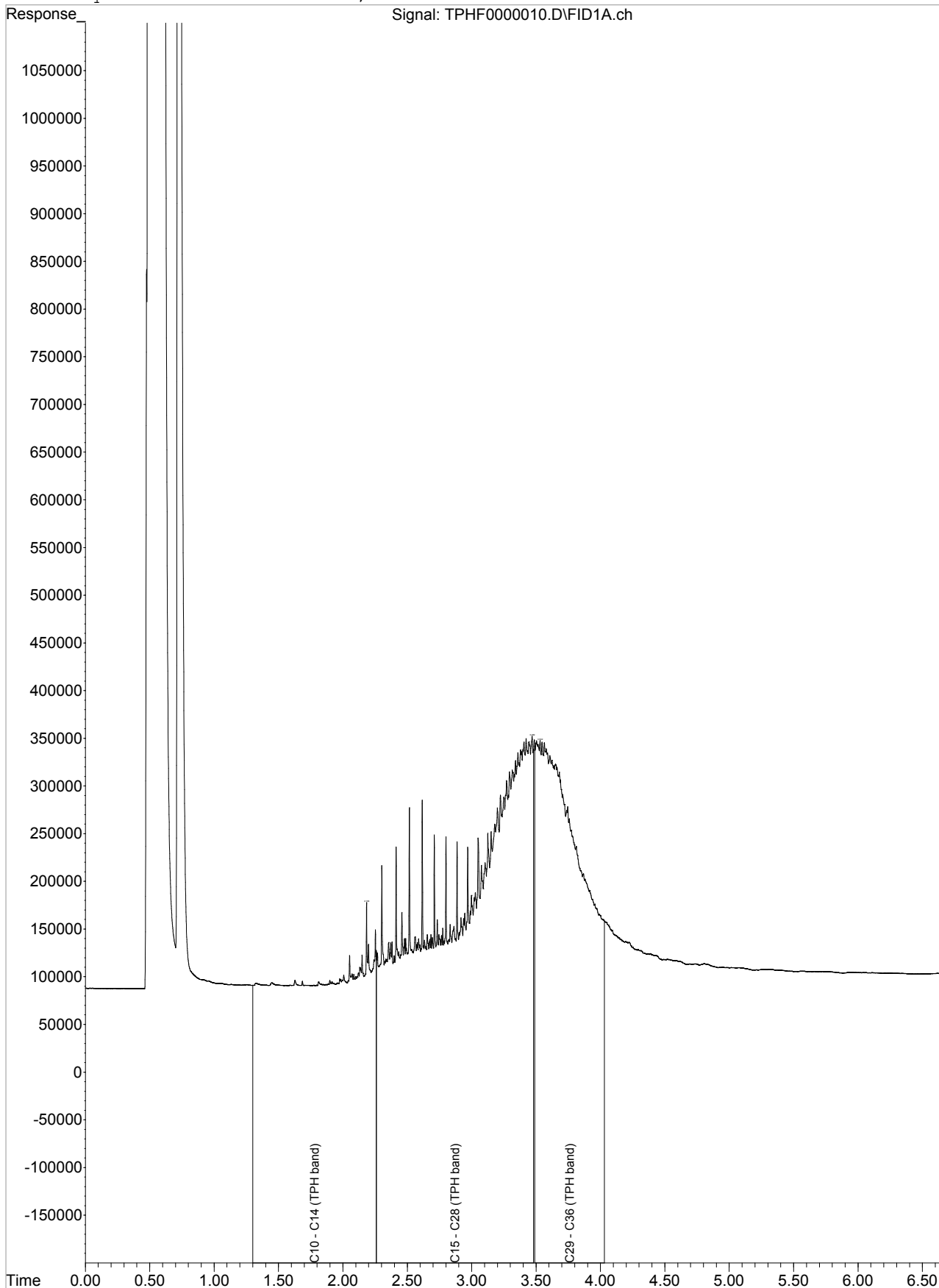
Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	64	130
Toluene-D8	2037-26-5	66	136
4-Bromofluorobenzene	460-00-4	60	122
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

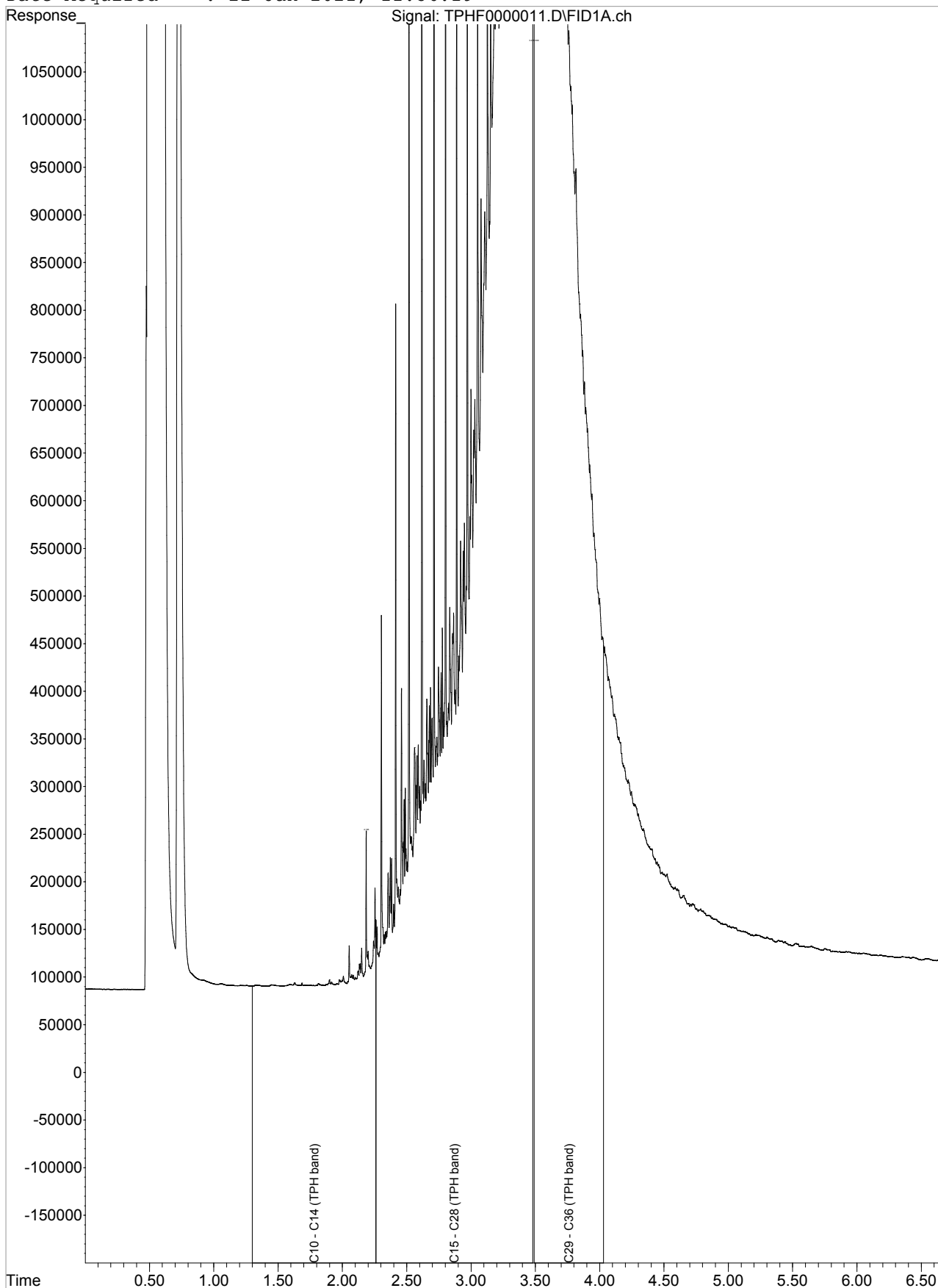
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Laboratory Number: ES2101586-009
Sample ID : Tank_0.1-0.2
Date Acquired : 22-Jan-2021, 11:31:27



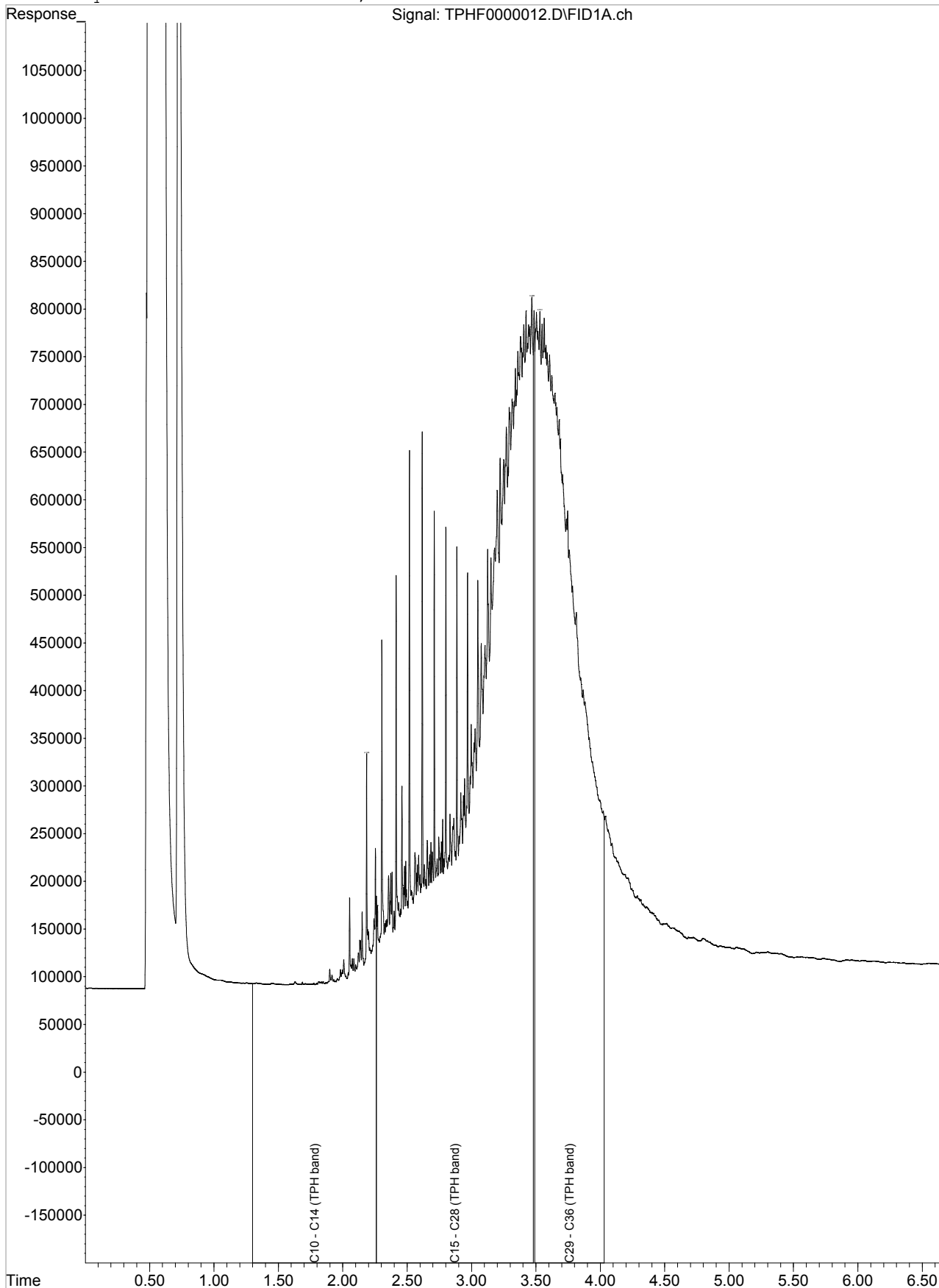
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Laboratory Number: ES2101586-011
Sample ID : Tank_0.3-0.4
Date Acquired : 22-Jan-2021, 11:43:46



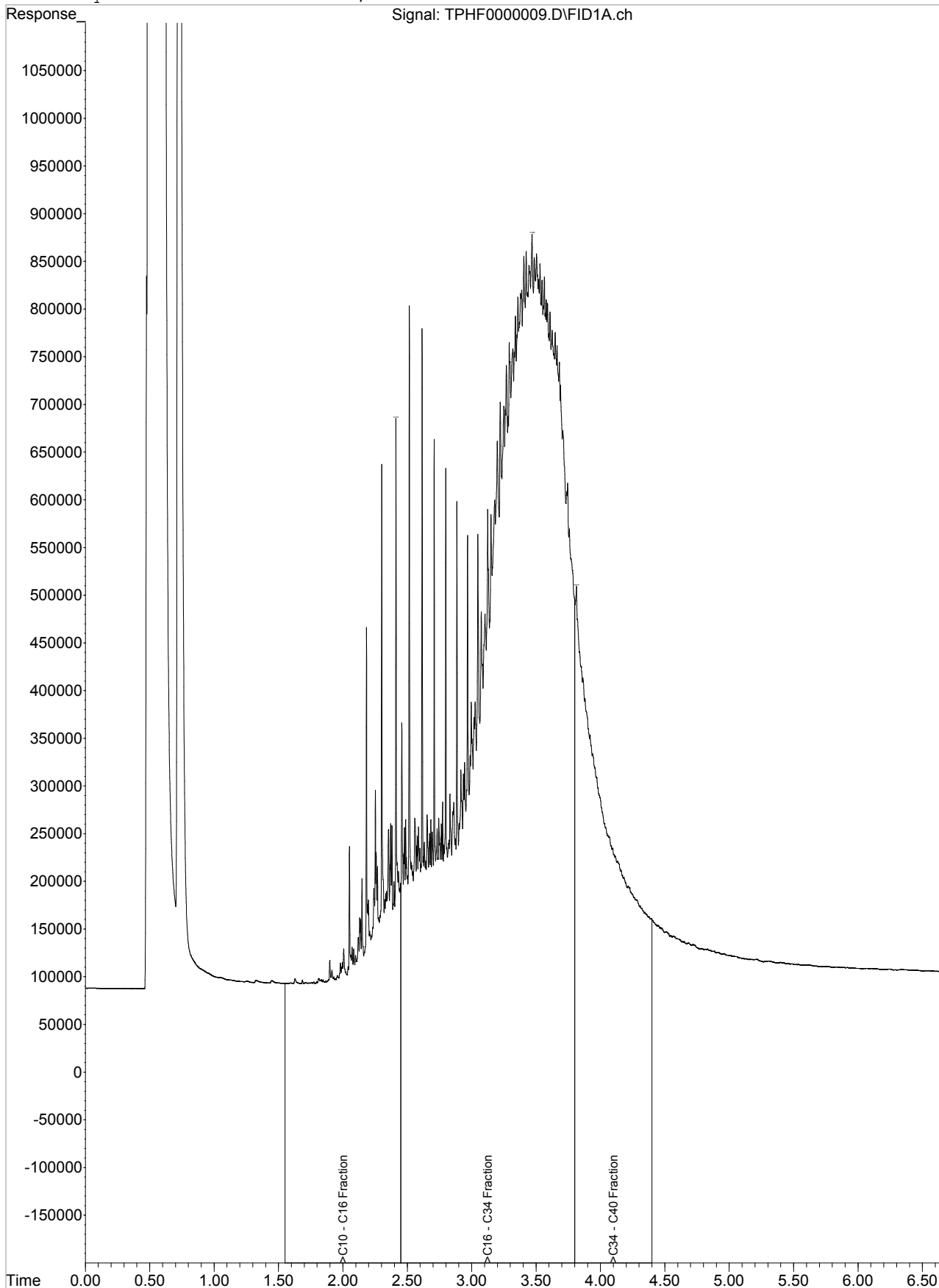
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Laboratory Number: ES2101586-008
Sample ID : Tank_0.0-0.1
Date Acquired : 22-Jan-2021, 11:56:19



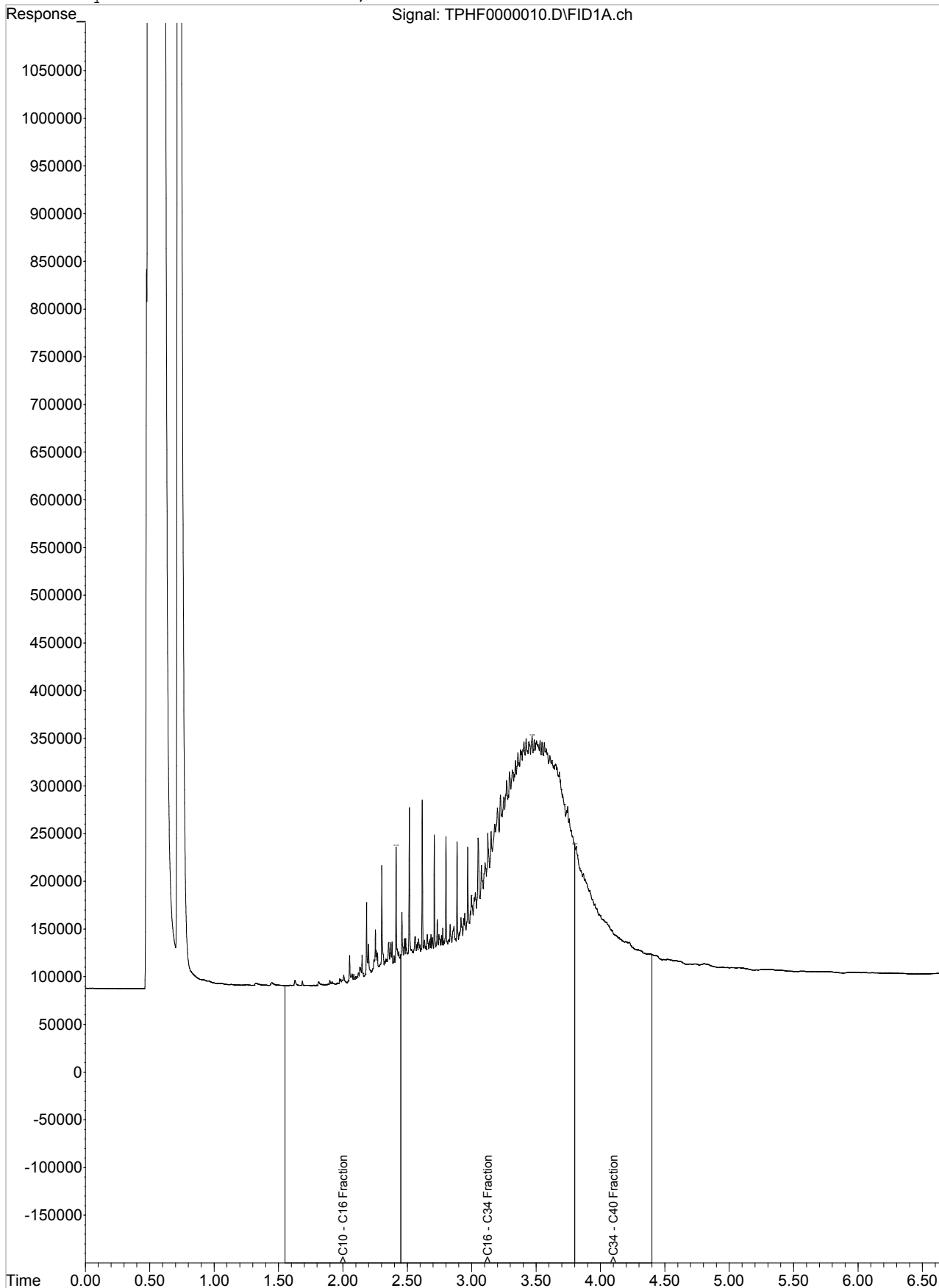
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Laboratory Number: ES2101586-010
Sample ID : Tank_0.2-0.3
Date Acquired : 22-Jan-2021, 12:08:44



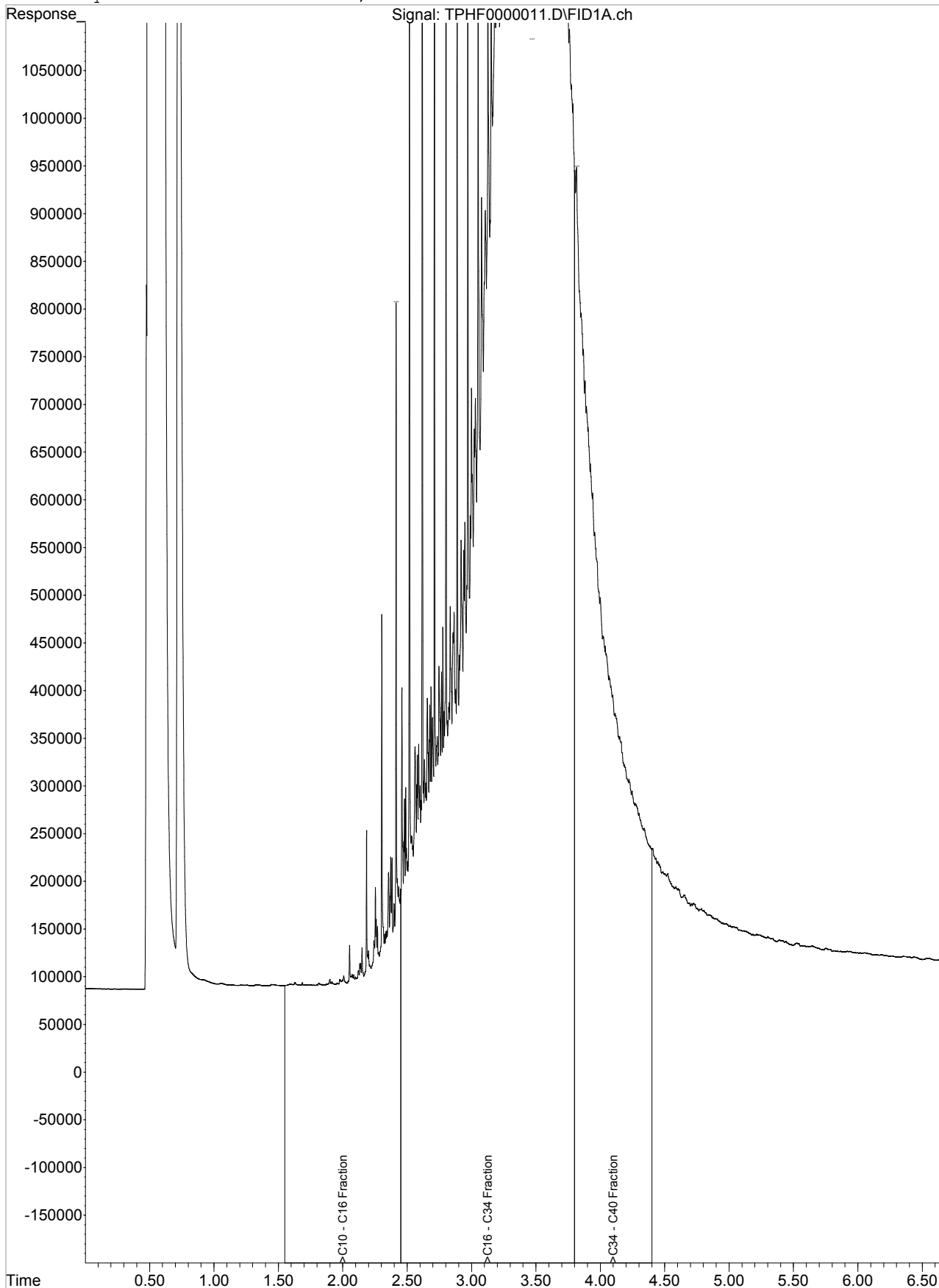
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Sample ID : Tank_0.1-0.2
Date Acquired : 22-Jan-2021, 11:31:27



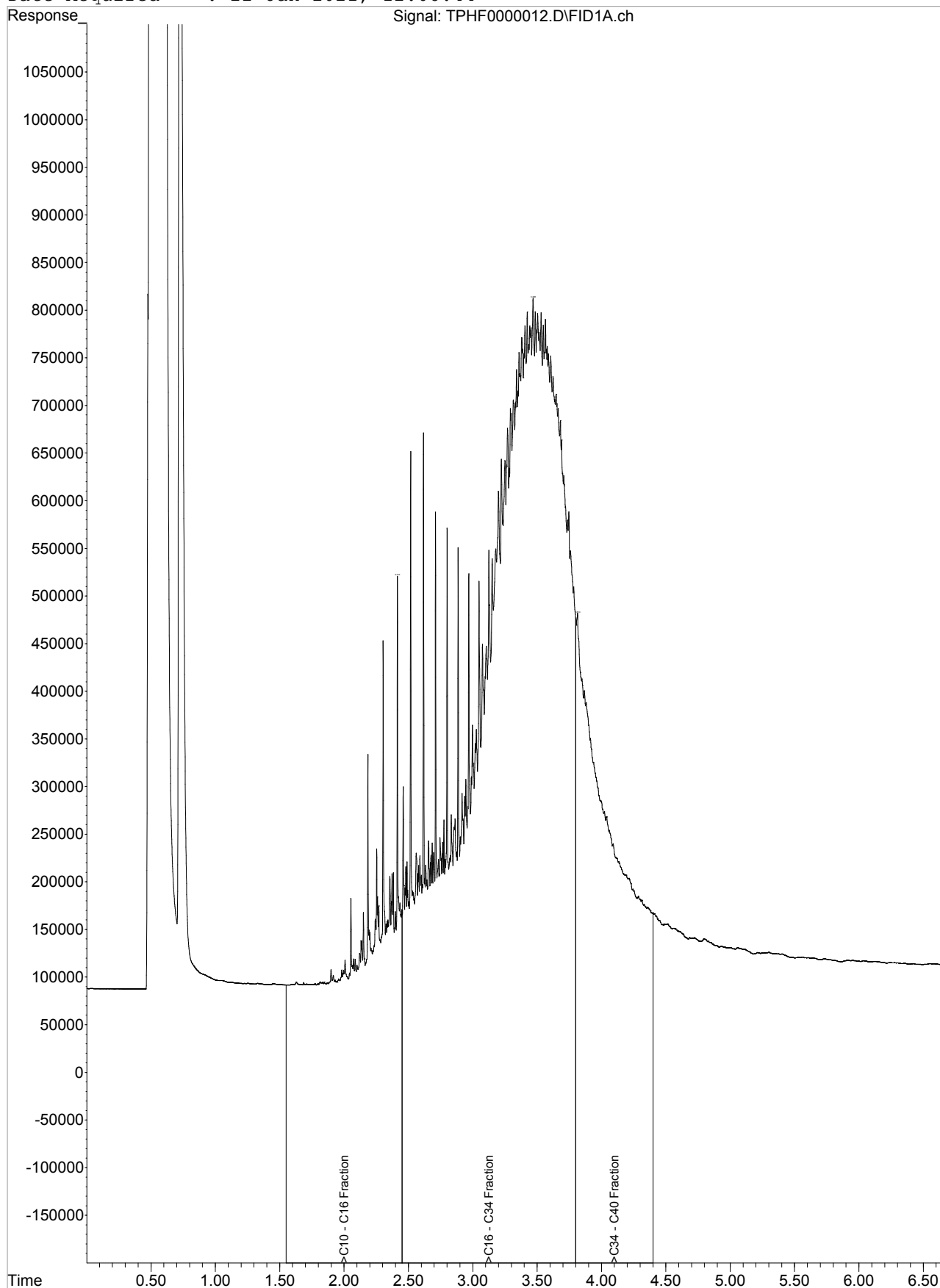
Fraction Scheme : NEPM
Data File : TPHF0000010.D
Laboratory Number: ES2101586-011
Sample ID : Tank_0.3-0.4
Date Acquired : 22-Jan-2021, 11:43:46



Fraction Scheme : NEPM
Data File : TPHF0000011.D
Laboratory Number: ES2101586-008
Sample ID : Tank_0.0-0.1
Date Acquired : 22-Jan-2021, 11:56:19



Fraction Scheme : NEPM
Data File : TPHF0000012.D
Laboratory Number: ES2101586-010
Sample ID : Tank_0.2-0.3
Date Acquired : 22-Jan-2021, 12:08:44



QUALITY CONTROL REPORT

Work Order	: ES2101586	Page	: 1 of 24
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: KATE HOLT	Contact	: Brenda Hong
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: 60619153/2g	Date Samples Received	: 15-Jan-2021
Order number	: 60619153/2g	Date Analysis Commenced	: 19-Jan-2021
C-O-C number	: ----	Issue Date	: 22-Jan-2021
Sampler	: Pankti Dalal		
Site	: AGL BLESS BH		
Quote number	: EN/004/20		
No. of samples received	: 22		
No. of samples analysed	: 22		



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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Ashesh Patel	Senior Chemist	Sydney Inorganics, Smithfield, NSW
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	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: 3467730)									
ES2101392-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	5	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	10	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	14	16	11.4	No Limit
ES2101586-009	Tank_0.1-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	14	13.6	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	10	12.8	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	16	12.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	18	32.3	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	48	54	11.4	0% - 50%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3467732)									
ES2101586-019	BH006_0.0-0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	10	14	26.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	11	13	16.9	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	21	22	6.41	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	30	38	25.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	62	83	29.1	0% - 50%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3470969)									
ES2101732-006	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	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: 3470969) - continued									
ES2101732-006	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	18	21	18.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	8	10	12.2	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	58	57	0.00	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	233	217	7.18	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	446	457	2.52	0% - 20%
ES2101417-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	30	31	4.42	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	14	14	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	9	15.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	20	22	5.31	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	14	0.00	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	29	31	9.04	No Limit		
EA002: pH 1:5 (Soils) (QC Lot: 3467734)									
ES2101392-001	Anonymous	EA002: pH Value	----	0.1	pH Unit	5.6	5.5	0.00	0% - 20%
ES2101586-010	Tank_0.2-0.3	EA002: pH Value	----	0.1	pH Unit	8.3	8.3	0.00	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 3467736)									
ES2101586-020	BH006_0.2-0.3	EA002: pH Value	----	0.1	pH Unit	8.8	9.0	2.59	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 3470944)									
EW2100171-001	Anonymous	EA002: pH Value	----	0.1	pH Unit	5.2	5.2	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3467737)									
ES2101392-003	Anonymous	EA055: Moisture Content	----	0.1	%	3.8	4.0	4.18	No Limit
ES2101586-012	BH003_0.0-0.1	EA055: Moisture Content	----	0.1	%	8.0	7.9	0.00	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3470971)									
ES2101732-001	Anonymous	EA055: Moisture Content	----	0.1	%	7.8	7.6	2.75	0% - 20%
ED006: Exchangeable Cations on Alkaline Soils (QC Lot: 3473453)									
ES2101586-008	Tank_0.0-0.1	ED006: Exchangeable Sodium Percent	----	0.2	%	14.9	15.1	0.972	0% - 20%
		ED006: Exchangeable Calcium	----	0.2	meq/100g	3.1	3.1	0.00	0% - 50%
		ED006: Exchangeable Magnesium	----	0.2	meq/100g	0.5	0.5	0.00	No Limit
		ED006: Exchangeable Potassium	----	0.2	meq/100g	<0.2	<0.2	0.00	No Limit
		ED006: Exchangeable Sodium	----	0.2	meq/100g	0.6	0.6	0.00	No Limit
		ED006: Cation Exchange Capacity	----	0.2	meq/100g	4.3	4.2	2.96	0% - 20%
ES2101586-017	BH005_0.0-0.1	ED006: Exchangeable Sodium Percent	----	0.2	%	<0.2	<0.2	0.00	No Limit
		ED006: Exchangeable Calcium	----	0.2	meq/100g	6.4	6.6	3.15	0% - 20%
		ED006: Exchangeable Magnesium	----	0.2	meq/100g	0.9	1.0	0.00	No Limit
		ED006: Exchangeable Potassium	----	0.2	meq/100g	0.7	0.8	0.00	No Limit
		ED006: Exchangeable Sodium	----	0.2	meq/100g	<0.2	<0.2	0.00	No Limit
		ED006: Cation Exchange Capacity	----	0.2	meq/100g	8.0	8.3	4.08	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3467731)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3467731) - continued									
ES2101392-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2101586-009	Tank_0.1-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3467733)									
ES2101586-019	BH006_0.0-0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3470970)									
ES2101417-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3467362)									
ES2101586-004	QC100_200112	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
ES2101586-014	BH003_0.7-0.8	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
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3469964)									
ES2101586-021	BH001_0.0-0.1	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3467362)									
ES2101586-004	QC100_200112	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074B: Oxygenated Compounds (QC Lot: 3467362) - continued									
ES2101586-004	QC100_200112	EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
ES2101586-014	BH003_0.7-0.8	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
		EP074B: Oxygenated Compounds (QC Lot: 3469964)							
ES2101586-021	BH001_0.0-0.1	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3467362)									
ES2101586-004	QC100_200112	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES2101586-014	BH003_0.7-0.8	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3469964)									
ES2101586-021	BH001_0.0-0.1	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074D: Fumigants (QC Lot: 3467362)									
ES2101586-004	QC100_200112	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES2101586-014	BH003_0.7-0.8	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074D: Fumigants (QC Lot: 3469964)									
ES2101586-021	BH001_0.0-0.1	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3467362)									
ES2101586-004	QC100_200112	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3467362) - continued									
ES2101586-004	QC100_200112	EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit
EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit		
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit		
ES2101586-014	BH003_0.7-0.8	EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3467362) - continued											
ES2101586-014	BH003_0.7-0.8	EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit		
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3469964)											
ES2101586-021	BH001_0.0-0.1	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.00	No Limit		
		EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.00	No Limit		
		EP074F: Halogenated Aromatic Compounds (QC Lot: 3467362)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 3467362) - continued									
ES2101586-004	QC100_200112	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES2101586-014	BH003_0.7-0.8	EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3469964)									
ES2101586-021	BH001_0.0-0.1	EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 3467362)									
ES2101586-004	QC100_200112	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES2101586-014	BH003_0.7-0.8	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 3469964)									
ES2101586-021	BH001_0.0-0.1	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP074G: Trihalomethanes (QC Lot: 3469964) - continued										
ES2101586-021	BH001_0.0-0.1	EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EP074H: Naphthalene (QC Lot: 3467362)										
ES2101586-004	QC100_200112	EP074: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit	
ES2101586-014	BH003_0.7-0.8	EP074: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit	
EP074H: Naphthalene (QC Lot: 3469964)										
ES2101586-021	BH001_0.0-0.1	EP074: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3467646)										
ES2101586-004	QC100_200112	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit			
ES2101586-017	BH005_0.0-0.1	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							



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3467646) - continued										
ES2101586-017	BH005_0.0-0.1	EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3469485)										
ES2101512-051	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit			
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit			
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3467363)										
ES2101586-004	QC100_200112	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit	
ES2101586-014	BH003_0.7-0.8	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3467647)										
ES2101586-004	QC100_200112	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	
ES2101586-017	BH005_0.0-0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit	
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3469486)										



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3469486) - continued									
ES2101512-051	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3469963)									
ES2101586-021	BH001_0.0-0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3467363)									
ES2101586-004	QC100_200112	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2101586-014	BH003_0.7-0.8	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: 3467647)									
ES2101586-004	QC100_200112	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
ES2101586-017	BH005_0.0-0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3469486)									
ES2101512-051	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3469963)									
ES2101586-021	BH001_0.0-0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 3467363)									
ES2101586-004	QC100_200112	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES2101586-014	BH003_0.7-0.8	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 3469963)									
ES2101586-021	BH001_0.0-0.1	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



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3469963) - continued									
ES2101586-021	BH001_0.0-0.1	EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
Sub-Matrix: WATER									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3471703)									
ES2101304-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.015	0.015	0.00	0% - 50%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.005	0.006	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
ES2101445-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.221	0.229	3.61	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.039	0.042	9.24	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3471711)									
ES2101106-009	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	0.0002	<0.0001	0.00	No Limit
ES2101586-003	QC302_200114	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3467801)									
ES2101483-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES2101488-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3467801)									
ES2101483-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES2101488-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 3467801)									
ES2101483-001	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	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		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**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3467730)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	92.8	88.0	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	93.0	70.0	130	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	85.0	68.0	132	
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	96.1	89.0	111	
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	86.1	82.0	119	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	86.0	80.0	120	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	76.2	66.0	133	
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3467732)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	99.5	88.0	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	120	70.0	130	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	92.0	68.0	132	
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	101	89.0	111	
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	87.0	82.0	119	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	92.9	80.0	120	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	86.4	66.0	133	
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3470969)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	101	88.0	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	128	70.0	130	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	120	68.0	132	
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	103	89.0	111	
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	104	82.0	119	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	107	80.0	120	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	84.5	66.0	133	
ED006: Exchangeable Cations on Alkaline Soils (QCLot: 3473453)									
ED006: Exchangeable Calcium	----	0.2	meq/100g	<0.2	2.5 meq/100g	101	80.0	110	
ED006: Exchangeable Magnesium	----	0.2	meq/100g	<0.2	4.17 meq/100g	96.2	80.0	110	
ED006: Exchangeable Potassium	----	0.2	meq/100g	<0.2	1.28 meq/100g	106	80.0	110	
ED006: Exchangeable Sodium	----	0.2	meq/100g	<0.2	2.17 meq/100g	104	80.0	110	
ED006: Cation Exchange Capacity	----	0.2	meq/100g	<0.2	----	----	----	----	
ED006: Exchangeable Sodium Percent	----	0.2	%	<0.2	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3467731)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	111	70.0	130	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3467733)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	105	70.0	130	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3470970)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	106	70.0	130	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3467362)									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	97.3	67.0	113	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	95.6	65.0	117	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	92.7	66.0	122	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	94.6	68.0	118	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	93.3	69.0	119	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	94.5	69.0	117	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	94.4	69.0	115	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	95.8	66.0	118	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	92.8	59.0	125	
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3469964)									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	96.0	67.0	113	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	98.0	65.0	117	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	95.0	66.0	122	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	94.9	68.0	118	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	97.3	69.0	119	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	95.3	69.0	117	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	96.2	69.0	115	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	96.9	66.0	118	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	98.3	59.0	125	
EP074B: Oxygenated Compounds (QCLot: 3467362)									
EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	10 mg/kg	96.0	29.6	156	
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	103	58.0	136	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	10 mg/kg	103	62.0	132	
EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	10 mg/kg	100	54.0	136	
EP074B: Oxygenated Compounds (QCLot: 3469964)									
EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	10 mg/kg	90.0	29.6	156	
EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	10 mg/kg	90.7	58.0	136	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	10 mg/kg	90.7	62.0	132	
EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	10 mg/kg	91.9	54.0	136	
EP074C: Sulfonated Compounds (QCLot: 3467362)									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	93.0	54.0	126	
EP074C: Sulfonated Compounds (QCLot: 3469964)									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	89.4	54.0	126	
EP074D: Fumigants (QCLot: 3467362)									
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	99.9	60.0	126	
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	98.2	68.0	124	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP074D: Fumigants (QCLot: 3467362) - continued									
EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	96.1	51.0	119	
EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	98.2	52.0	114	
EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	98.1	63.0	115	
EP074D: Fumigants (QCLot: 3469964)									
EP074: 2.2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	95.9	60.0	126	
EP074: 1.2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	95.5	68.0	124	
EP074: cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	91.5	51.0	119	
EP074: trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	89.5	52.0	114	
EP074: 1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	97.6	63.0	115	
EP074E: Halogenated Aliphatic Compounds (QCLot: 3467362)									
EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	10 mg/kg	93.6	30.0	148	
EP074: Chloromethane	74-87-3	5	mg/kg	<5	10 mg/kg	94.2	41.0	141	
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	96.0	43.0	147	
EP074: Bromomethane	74-83-9	5	mg/kg	<5	10 mg/kg	94.5	47.0	141	
EP074: Chloroethane	75-00-3	5	mg/kg	<5	10 mg/kg	94.1	49.0	143	
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	10 mg/kg	93.9	49.0	135	
EP074: 1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	93.4	54.0	126	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	93.9	43.0	129	
EP074: trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	92.2	64.0	120	
EP074: 1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	96.0	67.0	125	
EP074: cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	95.8	69.0	121	
EP074: 1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	92.1	65.0	117	
EP074: 1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	91.8	65.0	123	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	90.3	59.0	125	
EP074: 1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	97.5	65.0	125	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	93.4	70.0	118	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	99.0	68.0	118	
EP074: 1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	97.8	64.0	126	
EP074: 1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	98.9	68.0	122	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	94.4	67.0	143	
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	96.3	62.0	122	
EP074: trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	99.3	54.0	128	
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	96.9	55.0	129	
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	101	65.0	121	
EP074: 1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	100	61.0	125	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	93.1	19.8	134	
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	100	53.0	129	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	94.3	50.0	128	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP074E: Halogenated Aliphatic Compounds (QCLot: 3469964)									
EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	10 mg/kg	105	30.0	148	
EP074: Chloromethane	74-87-3	5	mg/kg	<5	10 mg/kg	103	41.0	141	
EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	10 mg/kg	98.4	43.0	147	
EP074: Bromomethane	74-83-9	5	mg/kg	<5	10 mg/kg	100	47.0	141	
EP074: Chloroethane	75-00-3	5	mg/kg	<5	10 mg/kg	99.2	49.0	143	
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	10 mg/kg	97.2	49.0	135	
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	94.0	54.0	126	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	82.2	43.0	129	
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	93.2	64.0	120	
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	93.8	67.0	125	
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	95.2	69.0	121	
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	96.1	65.0	117	
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	92.3	65.0	123	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	91.6	59.0	125	
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	95.3	65.0	125	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	97.4	70.0	118	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	93.3	68.0	118	
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	96.4	64.0	126	
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	95.7	68.0	122	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	99.8	67.0	143	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	93.8	62.0	122	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	93.5	54.0	128	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	86.7	55.0	129	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	93.2	65.0	121	
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	95.9	61.0	125	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	90.6	19.8	134	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	97.9	53.0	129	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	103	50.0	128	
EP074F: Halogenated Aromatic Compounds (QCLot: 3467362)									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	97.4	68.0	116	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	96.8	70.0	114	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	94.9	68.0	122	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	95.3	67.0	123	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	96.0	70.0	116	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	96.2	67.0	117	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	97.7	70.0	114	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	96.3	48.0	122	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	98.4	52.0	122	
EP074F: Halogenated Aromatic Compounds (QCLot: 3469964)									



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP074F: Halogenated Aromatic Compounds (QCLot: 3469964) - continued									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	99.2	68.0	116	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	93.0	70.0	114	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	95.2	68.0	122	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	95.9	67.0	123	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	94.6	70.0	116	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	97.8	67.0	117	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	96.2	70.0	114	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	102	48.0	122	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	100	52.0	122	
EP074G: Trihalomethanes (QCLot: 3467362)									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	94.9	66.0	124	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	95.2	61.0	121	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	94.4	63.0	121	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	95.2	60.0	126	
EP074G: Trihalomethanes (QCLot: 3469964)									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	93.2	66.0	124	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	89.9	61.0	121	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	91.6	63.0	121	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	88.4	60.0	126	
EP074H: Naphthalene (QCLot: 3467362)									
EP074: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	102	67.0	129	
EP074H: Naphthalene (QCLot: 3469964)									
EP074: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	107	67.0	129	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3467646)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	123	77.0	125	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	116	72.0	124	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	124	73.0	127	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	113	72.0	126	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	124	75.0	127	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	121	77.0	127	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	126	73.0	127	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	125	74.0	128	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	106	69.0	123	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	120	75.0	127	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	108	68.0	116	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	122	74.0	126	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	113	70.0	126	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3467646) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	106	61.0	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	88.5	62.0	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	91.0	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3469485)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	95.0	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	98.4	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	99.3	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	98.6	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	97.5	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	98.8	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	98.8	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	98.5	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	95.2	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	103	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	101	68.0	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	98.2	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	93.9	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	86.2	61.0	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	83.2	62.0	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	83.7	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3467363)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	98.5	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3467647)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	103	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	102	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	113	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3469486)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	100	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	97.0	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	95.8	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3469963)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	118	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3467363)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	101	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3467647)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	96.0	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	99.9	74.0	138



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3467647) - continued									
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	77.8	63.0	131	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3469486)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	96.8	77.0	125	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	97.4	74.0	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	111	63.0	131	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3469963)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	121	68.4	128	
EP080: BTEXN (QCLot: 3467363)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	107	62.0	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	102	67.0	121	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	101	65.0	117	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	102	66.0	118	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	105	68.0	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	90.7	63.0	119	
EP080: BTEXN (QCLot: 3469963)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	103	62.0	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	104	67.0	121	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	104	65.0	117	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	106	66.0	118	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	105	68.0	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	102	63.0	119	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020T: Total Metals by ICP-MS (QCLot: 3471703)									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.4	82.0	114	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.5	84.0	112	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.2	86.0	116	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.2	83.0	118	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.3	85.0	115	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.5	84.0	116	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	93.6	79.0	117	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3471711)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.8	77.0	111	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3467641)									



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3467641) - continued									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	91.8	55.8	112	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	98.2	71.6	113	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	99.5	56.0	121	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3467801)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	91.4	75.0	127	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3467641)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	76.8	57.9	119	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	89.3	62.5	110	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	86.6	61.5	121	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3467801)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	93.1	75.0	127	
EP080: BTEXN (QCLot: 3467801)									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	93.7	70.0	122	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	107	69.0	123	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	110	70.0	120	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	111	69.0	121	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	115	72.0	122	
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	117	70.0	120	

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3467730)								
ES2101392-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	92.7	70.0	130	
		EG005T: Cadmium	7440-43-9	50 mg/kg	86.7	70.0	130	
		EG005T: Chromium	7440-47-3	50 mg/kg	86.4	68.0	132	
		EG005T: Copper	7440-50-8	250 mg/kg	90.5	70.0	130	
		EG005T: Lead	7439-92-1	250 mg/kg	89.7	70.0	130	
		EG005T: Nickel	7440-02-0	50 mg/kg	91.2	70.0	130	
		EG005T: Zinc	7440-66-6	250 mg/kg	96.8	66.0	133	
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3467732)								
ES2101586-019	BH006_0.0-0.1	EG005T: Arsenic	7440-38-2	50 mg/kg	96.7	70.0	130	
		EG005T: Cadmium	7440-43-9	50 mg/kg	81.2	70.0	130	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3467732) - continued							
ES2101586-019	BH006_0.0-0.1	EG005T: Chromium	7440-47-3	50 mg/kg	89.2	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	94.7	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	89.3	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	95.0	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	98.4	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3470969)							
ES2101417-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	82.2	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.5	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	92.0	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	91.7	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	95.3	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	94.3	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	90.6	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3467731)							
ES2101392-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	87.2	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3467733)							
ES2101586-019	BH006_0.0-0.1	EG035T: Mercury	7439-97-6	5 mg/kg	81.4	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3470970)							
ES2101417-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	85.6	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3467362)							
ES2101586-004	QC100_200112	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	100	70.0	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	89.9	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3469964)							
ES2101586-021	BH001_0.0-0.1	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	92.4	70.0	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	104	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3467362)							
ES2101586-004	QC100_200112	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	87.0	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3469964)							
ES2101586-021	BH001_0.0-0.1	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	109	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3467646)							
ES2101586-004	QC100_200112	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	108	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	112	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3469485)							
ES2101512-051	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	98.8	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	100	70.0	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3467363)							
ES2101586-004	QC100_200112	EP080: C6 - C9 Fraction	----	32.5 mg/kg	99.3	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3467647)							
ES2101586-004	QC100_200112	EP071: C10 - C14 Fraction	----	523 mg/kg	104	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	109	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	123	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3469486)							
ES2101512-051	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	107	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	121	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	132	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3469963)							
ES2101586-021	BH001_0.0-0.1	EP080: C6 - C9 Fraction	----	32.5 mg/kg	123	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3467363)							
ES2101586-004	QC100_200112	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	100	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3467647)							
ES2101586-004	QC100_200112	EP071: >C10 - C16 Fraction	----	860 mg/kg	95.6	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	117	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	102	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3469486)							
ES2101512-051	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	125	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	120	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	131	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3469963)							
ES2101586-021	BH001_0.0-0.1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	124	70.0	130
EP080: BTEXN (QCLot: 3467363)							
ES2101586-004	QC100_200112	EP080: Benzene	71-43-2	2.5 mg/kg	113	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	97.8	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	98.8	70.0	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	98.7	70.0	130
		EP080: ortho-Xylene	106-42-3	2.5 mg/kg	100	70.0	130
		EP080: Naphthalene	95-47-6	2.5 mg/kg	90.6	70.0	130
EP080: BTEXN (QCLot: 3469963)							
ES2101586-021	BH001_0.0-0.1	EP080: Benzene	71-43-2	2.5 mg/kg	104	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	108	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	110	70.0	130



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 3469963) - continued							
ES2101586-021	BH001_0.0-0.1	EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	110	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	110	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	103	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3471703)							
ES2101304-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	93.8	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	90.0	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	88.3	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	76.7	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	86.7	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	89.2	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	83.1	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3471711)							
ES2101106-010	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	78.4	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3467801)							
ES2101483-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	106	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3467801)							
ES2101483-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	107	70.0	130
EP080: BTEXN (QCLot: 3467801)							
ES2101483-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	108	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	99.7	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	99.9	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	100	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	102	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	92.8	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2101586	Page	: 1 of 15
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: KATE HOLT	Telephone	: +61 2 8784 8555
Project	: 60619153/2g	Date Samples Received	: 15-Jan-2021
Site	: AGL BLESS BH	Issue Date	: 22-Jan-2021
Sampler	: Pankti Dalal	No. of samples received	: 22
Order number	: 60619153/2g	No. of samples analysed	: 22

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- 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 : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA002: pH 1:5 (Soils)							
Soil Glass Jar - Unpreserved							
BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	BH003_0.5-0.6, BH002_0.0-0.3,	----	----	----	20-Jan-2021	19-Jan-2021	1
Soil Glass Jar - Unpreserved							
BH005_0.0-0.1,	BH005_0.4-0.5	----	----	----	20-Jan-2021	19-Jan-2021	1
Soil Glass Jar - Unpreserved							
Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	----	----	----	20-Jan-2021	19-Jan-2021	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)					
TRH - Semivolatile Fraction	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method	Sample Date	Extraction / Preparation			Analysis		
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA002: pH 1:5 (Soils)								
Soil Glass Jar - Unpreserved (EA002) BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	BH003_0.5-0.6, BH002_0.0-0.3,	12-Jan-2021	19-Jan-2021	19-Jan-2021	✔	20-Jan-2021	19-Jan-2021	✘
Soil Glass Jar - Unpreserved (EA002) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	20-Jan-2021	✔	20-Jan-2021	19-Jan-2021	✘
Soil Glass Jar - Unpreserved (EA002) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	20-Jan-2021	✔	20-Jan-2021	20-Jan-2021	✔
Soil Glass Jar - Unpreserved (EA002) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	21-Jan-2021	✔	20-Jan-2021	19-Jan-2021	✘
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	----	----	----	19-Jan-2021	26-Jan-2021	✔
Soil Glass Jar - Unpreserved (EA055) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	----	----	----	19-Jan-2021	27-Jan-2021	✔
Soil Glass Jar - Unpreserved (EA055) BH001_0.0-0.1		13-Jan-2021	----	----	----	20-Jan-2021	27-Jan-2021	✔
Soil Glass Jar - Unpreserved (EA055) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	----	----	----	19-Jan-2021	28-Jan-2021	✔
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200) BH003_0.0-0.1, BH004_0.0-0.3	BH002_0.0-0.3,	12-Jan-2021	----	----	----	20-Jan-2021	11-Jul-2021	✔
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200) BH005_0.0-0.1		13-Jan-2021	----	----	----	20-Jan-2021	12-Jul-2021	✔
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200) BH001_0.0-0.1		13-Jan-2021	----	----	----	21-Jan-2021	12-Jul-2021	✔
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200) BH006_0.0-0.1		14-Jan-2021	----	----	----	20-Jan-2021	13-Jul-2021	✔



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED006: Exchangeable Cations on Alkaline Soils								
Soil Glass Jar - Unpreserved (ED006) BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	BH003_0.5-0.6, BH002_0.0-0.3,	12-Jan-2021	21-Jan-2021	09-Feb-2021	✓	21-Jan-2021	09-Feb-2021	✓
Soil Glass Jar - Unpreserved (ED006) BH005_0.0-0.1, BH001_0.0-0.1	BH005_0.4-0.5,	13-Jan-2021	21-Jan-2021	10-Feb-2021	✓	21-Jan-2021	10-Feb-2021	✓
Soil Glass Jar - Unpreserved (ED006) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	21-Jan-2021	11-Feb-2021	✓	21-Jan-2021	11-Feb-2021	✓
EG005(ED093T): Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	11-Jul-2021	✓	20-Jan-2021	11-Jul-2021	✓
Soil Glass Jar - Unpreserved (EG005T) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	12-Jul-2021	✓	20-Jan-2021	12-Jul-2021	✓
Soil Glass Jar - Unpreserved (EG005T) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	12-Jul-2021	✓	21-Jan-2021	12-Jul-2021	✓
Soil Glass Jar - Unpreserved (EG005T) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	13-Jul-2021	✓	20-Jan-2021	13-Jul-2021	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	09-Feb-2021	✓	20-Jan-2021	09-Feb-2021	✓
Soil Glass Jar - Unpreserved (EG035T) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	10-Feb-2021	✓	20-Jan-2021	10-Feb-2021	✓
Soil Glass Jar - Unpreserved (EG035T) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	10-Feb-2021	✓	22-Jan-2021	10-Feb-2021	✓
Soil Glass Jar - Unpreserved (EG035T) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	11-Feb-2021	✓	20-Jan-2021	11-Feb-2021	✓



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	19-Jan-2021	✓	19-Jan-2021	19-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	20-Jan-2021	✓	19-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	20-Jan-2021	✓	20-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	21-Jan-2021	✓	19-Jan-2021	21-Jan-2021	✓
EP074B: Oxygenated Compounds								
Soil Glass Jar - Unpreserved (EP074) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	19-Jan-2021	✓	19-Jan-2021	19-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	20-Jan-2021	✓	19-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	20-Jan-2021	✓	20-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	21-Jan-2021	✓	19-Jan-2021	21-Jan-2021	✓
EP074C: Sulfonated Compounds								
Soil Glass Jar - Unpreserved (EP074) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	19-Jan-2021	✓	19-Jan-2021	19-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	20-Jan-2021	✓	19-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	20-Jan-2021	✓	20-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	21-Jan-2021	✓	19-Jan-2021	21-Jan-2021	✓



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP074D: Fumigants								
Soil Glass Jar - Unpreserved (EP074) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	19-Jan-2021	✓	19-Jan-2021	19-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	20-Jan-2021	✓	19-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	20-Jan-2021	✓	20-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	21-Jan-2021	✓	19-Jan-2021	21-Jan-2021	✓
EP074E: Halogenated Aliphatic Compounds								
Soil Glass Jar - Unpreserved (EP074) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	19-Jan-2021	✓	19-Jan-2021	19-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	20-Jan-2021	✓	19-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	20-Jan-2021	✓	20-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	21-Jan-2021	✓	19-Jan-2021	21-Jan-2021	✓
EP074F: Halogenated Aromatic Compounds								
Soil Glass Jar - Unpreserved (EP074) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	19-Jan-2021	✓	19-Jan-2021	19-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	20-Jan-2021	✓	19-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	20-Jan-2021	✓	20-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	21-Jan-2021	✓	19-Jan-2021	21-Jan-2021	✓



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP074G: Trihalomethanes								
Soil Glass Jar - Unpreserved (EP074) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	19-Jan-2021	✓	19-Jan-2021	19-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	20-Jan-2021	✓	19-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	20-Jan-2021	✓	20-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	21-Jan-2021	✓	19-Jan-2021	21-Jan-2021	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	19-Jan-2021	✓	19-Jan-2021	19-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	20-Jan-2021	✓	19-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	20-Jan-2021	✓	20-Jan-2021	20-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP074) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	21-Jan-2021	✓	19-Jan-2021	21-Jan-2021	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3,	BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	26-Jan-2021	✓	21-Jan-2021	28-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) BH005_0.0-0.1,	BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	27-Jan-2021	✓	21-Jan-2021	28-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) BH001_0.0-0.1		13-Jan-2021	20-Jan-2021	27-Jan-2021	✓	20-Jan-2021	01-Mar-2021	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1,	Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	28-Jan-2021	✓	21-Jan-2021	28-Feb-2021	✓



Matrix: SOIL

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) TSC	11-Jan-2021	19-Jan-2021	25-Jan-2021	✓	19-Jan-2021	25-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP080) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3, BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	26-Jan-2021	✓	19-Jan-2021	26-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP071) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3, BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	26-Jan-2021	✓	21-Jan-2021	28-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP080) BH005_0.0-0.1, BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	27-Jan-2021	✓	19-Jan-2021	27-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP071) BH005_0.0-0.1, BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	27-Jan-2021	✓	21-Jan-2021	28-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP080) BH001_0.0-0.1	13-Jan-2021	20-Jan-2021	27-Jan-2021	✓	20-Jan-2021	27-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP080) QC400_200114 - TB, Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1, QC500_200114 - TS, Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	28-Jan-2021	✓	19-Jan-2021	28-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP071) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1, Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	28-Jan-2021	✓	21-Jan-2021	28-Feb-2021	✓



Matrix: **SOIL**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) TSC	11-Jan-2021	19-Jan-2021	25-Jan-2021	✓	19-Jan-2021	25-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP080) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3, BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	26-Jan-2021	✓	19-Jan-2021	26-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP071) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3, BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	26-Jan-2021	✓	21-Jan-2021	28-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP080) BH005_0.0-0.1, BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	27-Jan-2021	✓	19-Jan-2021	27-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP071) BH005_0.0-0.1, BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	27-Jan-2021	✓	21-Jan-2021	28-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP080) BH001_0.0-0.1	13-Jan-2021	20-Jan-2021	27-Jan-2021	✓	20-Jan-2021	27-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP080) QC400_200114 - TB, Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1, QC500_200114 - TS, Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	28-Jan-2021	✓	19-Jan-2021	28-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP071) Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1, Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	28-Jan-2021	✓	21-Jan-2021	28-Feb-2021	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) TSC	11-Jan-2021	19-Jan-2021	25-Jan-2021	✓	19-Jan-2021	25-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP080) QC100_200112, BH003_0.5-0.6, BH002_0.0-0.3, BH003_0.0-0.1, BH003_0.7-0.8, BH004_0.0-0.3	12-Jan-2021	19-Jan-2021	26-Jan-2021	✓	19-Jan-2021	26-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP080) BH005_0.0-0.1, BH005_0.4-0.5	13-Jan-2021	19-Jan-2021	27-Jan-2021	✓	19-Jan-2021	27-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP080) BH001_0.0-0.1	13-Jan-2021	20-Jan-2021	27-Jan-2021	✓	20-Jan-2021	27-Jan-2021	✓
Soil Glass Jar - Unpreserved (EP080) QC400_200114 - TB, Tank_0.0-0.1, Tank_0.2-0.3, BH006_0.0-0.1, QC500_200114 - TS, Tank_0.1-0.2, Tank_0.3-0.4, BH006_0.2-0.3	14-Jan-2021	19-Jan-2021	28-Jan-2021	✓	19-Jan-2021	28-Jan-2021	✓

Matrix: **SOLID**

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



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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) Fragment_200114_200114	14-Jan-2021	----	----	----	20-Jan-2021	13-Jul-2021	✓

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) QC300_210112	12-Jan-2021	21-Jan-2021	11-Jul-2021	✓	21-Jan-2021	11-Jul-2021	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) QC301_210113	13-Jan-2021	21-Jan-2021	12-Jul-2021	✓	21-Jan-2021	12-Jul-2021	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) QC302_200114	14-Jan-2021	21-Jan-2021	13-Jul-2021	✓	21-Jan-2021	13-Jul-2021	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) QC300_210112	12-Jan-2021	----	----	----	21-Jan-2021	09-Feb-2021	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) QC301_210113	13-Jan-2021	----	----	----	21-Jan-2021	10-Feb-2021	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) QC302_200114	14-Jan-2021	----	----	----	21-Jan-2021	11-Feb-2021	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) QC300_210112	12-Jan-2021	19-Jan-2021	19-Jan-2021	✓	20-Jan-2021	28-Feb-2021	✓
Amber Glass Bottle - Unpreserved (EP071) QC301_210113	13-Jan-2021	19-Jan-2021	20-Jan-2021	✓	20-Jan-2021	28-Feb-2021	✓
Amber Glass Bottle - Unpreserved (EP071) QC302_200114	14-Jan-2021	19-Jan-2021	21-Jan-2021	✓	20-Jan-2021	28-Feb-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC300_210112	12-Jan-2021	19-Jan-2021	26-Jan-2021	✓	19-Jan-2021	26-Jan-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC301_210113	13-Jan-2021	19-Jan-2021	27-Jan-2021	✓	19-Jan-2021	27-Jan-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC302_200114	14-Jan-2021	19-Jan-2021	28-Jan-2021	✓	19-Jan-2021	28-Jan-2021	✓



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) QC300_210112	12-Jan-2021	19-Jan-2021	19-Jan-2021	✓	20-Jan-2021	28-Feb-2021	✓
Amber Glass Bottle - Unpreserved (EP071) QC301_210113	13-Jan-2021	19-Jan-2021	20-Jan-2021	✓	20-Jan-2021	28-Feb-2021	✓
Amber Glass Bottle - Unpreserved (EP071) QC302_200114	14-Jan-2021	19-Jan-2021	21-Jan-2021	✓	20-Jan-2021	28-Feb-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC300_210112	12-Jan-2021	19-Jan-2021	26-Jan-2021	✓	19-Jan-2021	26-Jan-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC301_210113	13-Jan-2021	19-Jan-2021	27-Jan-2021	✓	19-Jan-2021	27-Jan-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC302_200114	14-Jan-2021	19-Jan-2021	28-Jan-2021	✓	19-Jan-2021	28-Jan-2021	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC300_210112	12-Jan-2021	19-Jan-2021	26-Jan-2021	✓	19-Jan-2021	26-Jan-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC301_210113	13-Jan-2021	19-Jan-2021	27-Jan-2021	✓	19-Jan-2021	27-Jan-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC302_200114	14-Jan-2021	19-Jan-2021	28-Jan-2021	✓	19-Jan-2021	28-Jan-2021	✓



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	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Exchangeable Cations on Alkaline Soils	ED006	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	3	30	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	3	18	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	4	23	17.39	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	28	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	5	34	14.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	18	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	21	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	3	18	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Exchangeable Cations on Alkaline Soils	ED006	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	18	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	28	10.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	34	8.82	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	18	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	18	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Exchangeable Cations on Alkaline Soils	ED006	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	18	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	28	10.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	34	8.82	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	18	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	18	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	18	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	28	10.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	34	8.82	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	18	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	18	11.11	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	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	10	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	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 (1:5)	EA002	SOIL	In house: Referenced to Rayment and Lyons 4A1 and APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM 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 Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Exchangeable Cations on Alkaline Soils	ED006	SOIL	In house: Referenced to Soil Survey Test Method C5. Soluble salts are removed from the sample prior to analysis. Cations are exchanged from the sample by contact with alcoholic ammonium chloride at pH 8.5. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil.
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 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 Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
Volatile Organic Compounds	EP074	SOIL	In house: Referenced to USEPA SW 846 - 8260 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 Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. 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 Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. 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.



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 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 Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 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 Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method (Alkaline Soils)	ED006PR	SOIL	In house: Referenced to Rayment and Lyons method 15C1.
Exchangeable Cations Preparation Method	ED007PR	SOIL	In house: Referenced to Rayment & Lyons method 15A1. A 1M NH ₄ Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
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 Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ 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.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 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 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 purging.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2101586

Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: KATE HOLT	Contact	: Brenda Hong
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: kate.holt@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 60619153/2g	Page	: 1 of 4
Order number	: 60619153/2g	Quote number	: ES2020AECOMAU0033 (EN/004/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: AGL BLESS BH		
Sampler	: Pankti Dalal		

Dates

Date Samples Received	: 15-Jan-2021 18:20	Issue Date	: 21-Jan-2021
Client Requested Due Date	: 22-Jan-2021	Scheduled Reporting Date	: 22-Jan-2021

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 10.2' C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 22 / 22

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- 19/1/21: This is an updated SRN which indicates the additional analysis requested.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Asbestos not logged for Tank_0.0-0.1 as the appropriate container was not received.
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES2101586-007 : [14-Jan-2021] : Fragment_200114_200114

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA002 pH (1:5)	SOIL - EA055-103 Moisture Content	SOIL - EP074 (solids) Volatile Organic Compounds	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2101586-004	12-Jan-2021 00:00	QC100_200112		✓	✓		✓
ES2101586-005	14-Jan-2021 00:00	QC400_200114 TB				✓	
ES2101586-006	14-Jan-2021 00:00	QC500_200114 TS				✓	
ES2101586-008	14-Jan-2021 00:00	Tank_0.0-0.1	✓	✓	✓		✓
ES2101586-009	14-Jan-2021 00:00	Tank_0.1-0.2	✓	✓	✓		✓
ES2101586-010	14-Jan-2021 00:00	Tank_0.2-0.3	✓	✓	✓		✓
ES2101586-011	14-Jan-2021 00:00	Tank_0.3-0.4	✓	✓	✓		✓
ES2101586-012	12-Jan-2021 00:00	BH003_0.0-0.1	✓	✓	✓		✓
ES2101586-013	12-Jan-2021 00:00	BH003_0.5-0.6	✓	✓	✓		✓
ES2101586-014	12-Jan-2021 00:00	BH003_0.7-0.8	✓	✓	✓		✓
ES2101586-015	12-Jan-2021 00:00	BH002_0.0-0.3	✓	✓	✓		✓
ES2101586-016	12-Jan-2021 00:00	BH004_0.0-0.3	✓	✓	✓		✓
ES2101586-017	13-Jan-2021 00:00	BH005_0.0-0.1	✓	✓	✓		✓
ES2101586-018	13-Jan-2021 00:00	BH005_0.4-0.5	✓	✓	✓		✓
ES2101586-019	14-Jan-2021 00:00	BH006_0.0-0.1	✓	✓	✓		✓
ES2101586-020	14-Jan-2021 00:00	BH006_0.2-0.3	✓	✓	✓		✓
ES2101586-021	13-Jan-2021 00:00	BH001_0.0-0.1	✓	✓	✓		✓
ES2101586-022	11-Jan-2021 00:00	TSC				✓	

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA200G Asbestos Identification in Soils -	SOIL - ED006 Def Exchangeable Cations on Alkaline Soils - Default
ES2101586-008	14-Jan-2021 00:00	Tank_0.0-0.1		✓
ES2101586-009	14-Jan-2021 00:00	Tank_0.1-0.2		✓
ES2101586-010	14-Jan-2021 00:00	Tank_0.2-0.3		✓
ES2101586-011	14-Jan-2021 00:00	Tank_0.3-0.4		✓



			SOIL - EA200G Asbestos Identification in Soils -	SOIL - ED006 Def Exchangeable Cations on Alkaline Soils - Default
ES2101586-012	12-Jan-2021 00:00	BH003_0.0-0.1	✓	✓
ES2101586-013	12-Jan-2021 00:00	BH003_0.5-0.6		✓
ES2101586-014	12-Jan-2021 00:00	BH003_0.7-0.8		✓
ES2101586-015	12-Jan-2021 00:00	BH002_0.0-0.3	✓	✓
ES2101586-016	12-Jan-2021 00:00	BH004_0.0-0.3	✓	✓
ES2101586-017	13-Jan-2021 00:00	BH005_0.0-0.1	✓	✓
ES2101586-018	13-Jan-2021 00:00	BH005_0.4-0.5		✓
ES2101586-019	14-Jan-2021 00:00	BH006_0.0-0.1	✓	✓
ES2101586-020	14-Jan-2021 00:00	BH006_0.2-0.3		✓
ES2101586-021	13-Jan-2021 00:00	BH001_0.0-0.1	✓	✓

Matrix: **SOLID**

Laboratory sample ID	Sampling date / time	Sample ID	SOLID - EA200B Asbestos Identification in Bulk Solids (Excluding
ES2101586-007	14-Jan-2021 00:00	Fragment_200114_2001...	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - W-05T TRH/BTEXN/8 Metals (Total)
ES2101586-001	12-Jan-2021 00:00	QC300_210112	✓
ES2101586-002	13-Jan-2021 00:00	QC301_210113	✓
ES2101586-003	14-Jan-2021 00:00	QC302_200114	✓



Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- | | | |
|--------------------------------|-------|----------------------------------|
| - A4 - AU Tax Invoice (INV) | Email | AP_CustomerService.ANZ@aecom.com |
| - Chain of Custody (CoC) (COC) | Email | AP_CustomerService.ANZ@aecom.com |

KATE HOLT


- | | | |
|--|-------|---------------------|
| - *AU Certificate of Analysis - NATA (COA) | Email | kate.holt@aecom.com |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | kate.holt@aecom.com |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | kate.holt@aecom.com |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | kate.holt@aecom.com |
| - Chain of Custody (CoC) (COC) | Email | kate.holt@aecom.com |
| - Chromatogram (CHROM) | Email | kate.holt@aecom.com |
| - EDI Format - ENMRG (ENMRG) | Email | kate.holt@aecom.com |
| - EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM) | Email | kate.holt@aecom.com |
| - EDI Format - ESDAT (ESDAT) | Email | kate.holt@aecom.com |
| - EDI Format - XTab (XTAB) | Email | kate.holt@aecom.com |
| - Electronic SRN for EQUIS (ESRN_EQUIS) | Email | kate.holt@aecom.com |

PANKTI DALAL

- | | | |
|--|-------|------------------------|
| - *AU Certificate of Analysis - NATA (COA) | Email | pankti.dalal@aecom.com |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) | Email | pankti.dalal@aecom.com |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) | Email | pankti.dalal@aecom.com |
| - A4 - AU Sample Receipt Notification - Environmental HT (SRN) | Email | pankti.dalal@aecom.com |
| - Chain of Custody (CoC) (COC) | Email | pankti.dalal@aecom.com |
| - Chromatogram (CHROM) | Email | pankti.dalal@aecom.com |
| - EDI Format - ENMRG (ENMRG) | Email | pankti.dalal@aecom.com |
| - EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM) | Email | pankti.dalal@aecom.com |
| - EDI Format - ESDAT (ESDAT) | Email | pankti.dalal@aecom.com |
| - EDI Format - XTab (XTAB) | Email | pankti.dalal@aecom.com |
| - Electronic SRN for EQUIS (ESRN_EQUIS) | Email | pankti.dalal@aecom.com |

FORM - Generic Chain of Custody Form

AECOM
Q&AN(EV)-007-FM1

CONSULTANT: AECOM		ADDRESS: Level 21, 420 George Street, Sydney		SAMPLER: Panki Dalal		Destination: Laboratory											
PROJECT MANAGER: Paula Kelle Hill		SITE: AOL BRESS BR		MOBILE: M +61 498 213 287		PHONE:											
PROJECT NUMBER & TASK CODE: 60619153129		P.O. NO.:		EMAIL REPORT TO: pankidalal@aecom.com, paula.hill@aecom.com		ALS											
RESULTS REQUIRED (Per): Standard TAT		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:		ANALYSIS REQUIRED INCLUDING SURFS (Note - site codes must be fixed to attend site areas)													
		Please send SRN ASAP. Please forward QC200 Eurofins ASAP and marked as appropriate. Please include email: andrg@evs.aecom.com		CONTAINER INFORMATION													
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type Code	Total Bases	TRH, BTEXN	TRH C6-C8, BTEXN	BTEXN	Asbestos (absence/presence)	pH	Cation Exchange Capacity	Metals	PAHs	VOCs	HOLD	
1	QC300_210112	Water	12/01/2021		2 vials, 1 x preserved metals, 1 x amber	4	X						X				Rinseate
2	QC301_210113	Water	13/01/2021		2 vials, 1 x preserved metals, 1 x amber	4	X						X				Rinseate
3	QC302_210114	Water	14/01/2021		2 x vials, 1 x preserved metals, 1 x amber	4	X						X				Rinseate
4	QC200_200113	Soil	13/01/2021		1 x soil per (glass)	1	X						X	X	X		Please forward to Eurofins ASAP
5	QC100_200112	Soil	12/01/2021		1 x soil per (glass)	1	X						X	X	X		
6	QC400_200114	Soil	14/01/2021		1 x soil per (glass)	1		X									TriB Blank
7	QC500_200114	Soil	14/01/2021		1 x soil per (glass)	1			X								TriB Spike
8	Fragment 200114	Soil	14/01/2021		1 x ACM Bag	1				X							Potential ACM Fragment grab sample
9	Tank 0.0-0.1	Soil	14/01/2021		1 x soil per (glass)	1	X						X	X	X		
10	Tank 0.1-0.2	Soil	14/01/2021		1 x soil per (glass)	1	X						X	X	X		
11	Tank 0.2-0.3	Soil	14/01/2021		1 x soil per (glass)	1	X						X	X	X		
12	Tank 0.3-0.4	Soil	14/01/2021		1 x soil per (glass)	1	X						X	X	X		
13	BH003 0.0-0.1	Soil	12/01/2021		1 x soil per (glass), 1 x small ACM bag	2	X			X			X	X	X		
14	BH003 0.5-0.6	Soil	12/01/2021		1 x soil per (glass), 1 x small ACM bag	2	X			X			X	X	X		
15	BH003 0.7-0.8	Soil	12/01/2021		1 x soil per (glass), 1 x small ACM bag	2	X			X			X	X	X		
16	BH002 0.0-0.3	Soil	12/01/2021		1 x soil per (glass), 1 x small ACM bag	2	X			X			X	X	X		
17	BH004 0.0-0.3	Soil	12/01/2021		1 x soil per (glass), 1 x small ACM bag	2	X			X			X	X	X		
18	BH005 0.0-0.1	Soil	13/01/2021		1 x soil per (glass), 1 x small ACM bag	2	X			X			X	X	X		
19	BH005 0.4-0.5	Soil	13/01/2021		1 x soil per (glass), 1 x small ACM bag	2	X			X			X	X	X		

NAME: **Panki Dalal**
 OF: **AECOM**
 Date: **27/11/2020**
 Time:

RECEIVED BY: **Vishal Patel**
 OF: **ALS**
 Date: **15/01/2021**
 Time: **12:20**

RECEIVED BY: **Vishal Patel**
 OF: **ALS**
 Date: **15/01/2021**
 Time: **12:20**

RECEIVED BY: **Vishal Patel**
 OF: **ALS**
 Date: **15/01/2021**
 Time: **12:20**

Environmental Division
Sydney
 Work Order Reference
ES2101586



CONSULTANT: AECOM		ADDRESS: Level 21, 420 George Street, Sydney		SAMPLE BY: Pankaj Dalal		Destination Laboratory	
PROJECT NUMBER & TASK CODE: 606191532g		SITE: AGL BSSS BH		MOBILE: M +61 489 213 287		ALS	
P.O. NO.:		P.O. NO.:		EMAIL REPORT TO: pankaj.dalal@aecom.com, kate.holt@aecom.com		PHONE:	
RESULTS REQUIRED (and Standard TAT)		COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL		ANALYSIS REQUIRED INCLUDING SUFFERS (note - suite codes must be listed to attract suite prices)			
FOR LABORATORY USE ONLY		COOLER SEAL (only a ziplock bag)		TRH, BTEXN			
SAMPLER TEMPERATURE		NO		Asbestos (absence/presence)			
SAMPLER TYPE		NO		pH			
SAMPLER LOCATION		NO		Cation Exchange Capacity			
SAMPLER DATE		NO		Metals			
SAMPLER TIME		NO		PAHs			
SAMPLER NAME		NO		VOCs			
SAMPLER NO.		NO		HOLD			
SAMPLER INFORMATION (note: S = Soil, Water)		SAMPLE INFORMATION		CONTAINER INFORMATION			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type/Cole	Total Bottles	
19	BH006_00-0-1	Soil	14/01/2021		1 x soil (per glass), 1 x small ACM bag	2	X X X X X X
20	BH006_02-0-3	Soil	14/01/2021		1 x soil (per glass), 1 x small ACM bag	2	X X X X X X
	<i>Received at Karsa sample</i>						
21	BH001_00-0-1	Soil	13/1/21				
22	TSC	Soil	11/1/21				

Helen Simpson

From: Holt, Kate <Kate.Holt@aecom.com>
Sent: Tuesday, 19 January 2021 2:39 PM
To: Helen Simpson
Cc: Dalal, Pankti
Subject: [EXTERNAL] - RE: ALS Workorder ES2101586, Client AECOMAU, Project 60619153/2g

CAUTION: This email originated from outside of ALS. Do not click links or open attachments unless you recognize the sender and are sure content is relevant to you.

Hi Helen

Please analyse BH001_0.0-0.1 for the below analysis

TRH, BTEXN	Asbestos (absence/presence)	pH	Cation Exchange Capacity	Metals	PAHs	VOCS
X	X	X	X	X	X	X

Do you have sufficient volume to sub-sample for asbestos (absence/presence) from the jar for Tank_0.0-0.1?

Thanks,

Kate Holt
Principal Environmental Scientist
M +61 400 849 797
Kate.Holt@aecom.com

AECOM
Level 21, 420 George Street, Sydney, NSW 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
T +61 2 8934 0000 F +61 2 8934 0001
www.aecom.com

Please consider the environment before printing this email.

From: Helen Simpson <helen.simpson@alsglobal.com>
Sent: Tuesday, 19 January 2021 2:31 PM
To: Holt, Kate <Kate.Holt@aecom.com>; Dalal, Pankti <Pankti.Dalal@aecom.com>
Subject: [EXTERNAL] ALS Workorder ES2101586, Client AECOMAU, Project 60619153/2g

Hi Kae/Pankti,

For this attached COC, please note that we did not receive a separate asbestos bag for sample 8, Tank_0.0-0.1.

Also, we received extra sample BH001_0.0-0.1 which has been placed on hold. Please let me know if it needs to be analysed.

Kind Regards,

Helen Simpson

Sample Admin, Environmental
Sydney



T +61 2 8784 8555
E +61 2 8784 8500
helen.simpson@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA



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Recent releases (click to access directly):

[EnviroMail™ 127 – Bacterial Diversity Profiling in NGS](#)

[EnviroMail™ 128 – Revised PFAS Bottle Requirements](#)

Holiday trading hours →

Stay safe this festive season.



CERTIFICATE OF ANALYSIS 259778

Client Details

Client	AECOM Australia Pty Ltd (Sydney)
Attention	Kate Holt
Address	PO Box Q410, QVB Post Office, Sydney, NSW, 1230

Sample Details

Your Reference	60619153/2g
Number of Samples	1 Soil
Date samples received	19/01/2021
Date completed instructions received	19/01/2021

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
 Samples were analysed as received from the client. Results relate specifically to the samples as received.
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.


Report Details

Date results requested by	25/01/2021
Date of Issue	22/01/2021
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Dragana Tomas, Senior Chemist
 Hannah Nguyen, Senior Chemist
 Manju Dewendrage, Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in soil		
Our Reference		259778-1
Your Reference	UNITS	QC200_200113
Date Sampled		13/01/2021
Type of sample		Soil
Date extracted	-	20/01/2021
Date analysed	-	20/01/2021
Dichlorodifluoromethane	mg/kg	<1
Chloromethane	mg/kg	<1
Vinyl Chloride	mg/kg	<1
Bromomethane	mg/kg	<1
Chloroethane	mg/kg	<1
Trichlorofluoromethane	mg/kg	<1
1,1-Dichloroethene	mg/kg	<1
trans-1,2-dichloroethene	mg/kg	<1
1,1-dichloroethane	mg/kg	<1
cis-1,2-dichloroethene	mg/kg	<1
bromochloromethane	mg/kg	<1
chloroform	mg/kg	<1
2,2-dichloropropane	mg/kg	<1
1,2-dichloroethane	mg/kg	<1
1,1,1-trichloroethane	mg/kg	<1
1,1-dichloropropene	mg/kg	<1
Cyclohexane	mg/kg	<1
carbon tetrachloride	mg/kg	<1
Benzene	mg/kg	<0.2
dibromomethane	mg/kg	<1
1,2-dichloropropane	mg/kg	<1
trichloroethene	mg/kg	<1
bromodichloromethane	mg/kg	<1
trans-1,3-dichloropropene	mg/kg	<1
cis-1,3-dichloropropene	mg/kg	<1
1,1,2-trichloroethane	mg/kg	<1
Toluene	mg/kg	<0.5
1,3-dichloropropane	mg/kg	<1
dibromochloromethane	mg/kg	<1
1,2-dibromoethane	mg/kg	<1
tetrachloroethene	mg/kg	<1
1,1,1,2-tetrachloroethane	mg/kg	<1
chlorobenzene	mg/kg	<1
Ethylbenzene	mg/kg	<1

VOCs in soil		
Our Reference		259778-1
Your Reference	UNITS	QC200_200113
Date Sampled		13/01/2021
Type of sample		Soil
bromoform	mg/kg	<1
m+p-xylene	mg/kg	<2
styrene	mg/kg	<1
1,1,2,2-tetrachloroethane	mg/kg	<1
o-Xylene	mg/kg	<1
1,2,3-trichloropropane	mg/kg	<1
isopropylbenzene	mg/kg	<1
bromobenzene	mg/kg	<1
n-propyl benzene	mg/kg	<1
2-chlorotoluene	mg/kg	<1
4-chlorotoluene	mg/kg	<1
1,3,5-trimethyl benzene	mg/kg	<1
tert-butyl benzene	mg/kg	<1
1,2,4-trimethyl benzene	mg/kg	<1
1,3-dichlorobenzene	mg/kg	<1
sec-butyl benzene	mg/kg	<1
1,4-dichlorobenzene	mg/kg	<1
4-isopropyl toluene	mg/kg	<1
1,2-dichlorobenzene	mg/kg	<1
n-butyl benzene	mg/kg	<1
1,2-dibromo-3-chloropropane	mg/kg	<1
1,2,4-trichlorobenzene	mg/kg	<1
hexachlorobutadiene	mg/kg	<1
1,2,3-trichlorobenzene	mg/kg	<1
Surrogate Dibromofluorometha	%	95
Surrogate aaa-Trifluorotoluene	%	92
Surrogate Toluene-d ₈	%	117
Surrogate 4-Bromofluorobenzene	%	99

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		259778-1
Your Reference	UNITS	QC200_200113
Date Sampled		13/01/2021
Type of sample		Soil
Date extracted	-	20/01/2021
Date analysed	-	20/01/2021
TRH C ₆ - C ₉	mg/kg	<25
TRH C ₆ - C ₁₀	mg/kg	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	92

svTRH (C10-C40) in Soil		
Our Reference		259778-1
Your Reference	UNITS	QC200_200113
Date Sampled		13/01/2021
Type of sample		Soil
Date extracted	-	20/01/2021
Date analysed	-	20/01/2021
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	87

PAHs in Soil		
Our Reference		259778-1
Your Reference	UNITS	QC200_200113
Date Sampled		13/01/2021
Type of sample		Soil
Date extracted	-	20/01/2021
Date analysed	-	22/01/2021
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	94

Acid Extractable metals in soil		
Our Reference		259778-1
Your Reference	UNITS	QC200_200113
Date Sampled		13/01/2021
Type of sample		Soil
Date prepared	-	20/01/2021
Date analysed	-	20/01/2021
Arsenic	mg/kg	6
Cadmium	mg/kg	<0.4
Chromium	mg/kg	13
Copper	mg/kg	15
Lead	mg/kg	7
Mercury	mg/kg	<0.1
Nickel	mg/kg	9
Zinc	mg/kg	22

Moisture		
Our Reference		259778-1
Your Reference	UNITS	QC200_200113
Date Sampled		13/01/2021
Type of sample		Soil
Date prepared	-	20/01/2021
Date analysed	-	21/01/2021
Moisture	%	20

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Method ID	Methodology Summary
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: VOCs in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	259778-1
Date extracted	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	20/01/2021
Date analysed	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	20/01/2021
Dichlorodifluoromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
trans-1,2-dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	81	102
cis-1,2-dichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromochloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
chloroform	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	83	101
2,2-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	80	100
1,1,1-trichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	75	95
1,1-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
carbon tetrachloride	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
dibromomethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
trichloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	84	101
bromodichloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	103	124
trans-1,3-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
dibromochloromethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	128
1,2-dibromoethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
tetrachloroethene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	113
1,1,1,2-tetrachloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
chlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromoform	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
styrene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	259778-1
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
isopropylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
bromobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
tert-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
sec-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
hexachlorobutadiene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
<i>Surrogate</i> Dibromofluorometha	%		Org-023	104	[NT]	[NT]	[NT]	[NT]	123	104
<i>Surrogate</i> aaa-Trifluorotoluene	%		Org-023	86	[NT]	[NT]	[NT]	[NT]	93	110
<i>Surrogate</i> Toluene-d ₈	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	119	102
<i>Surrogate</i> 4-Bromofluorobenzene	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	110	100

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	259778-1
Date extracted	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	20/01/2021
Date analysed	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	20/01/2021
TRH C ₆ - C ₉	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	88	111
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	88	111
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	83	105
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	92	112
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	93	119
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	87	110
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	90	115
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	86	[NT]	[NT]	[NT]	[NT]	93	110

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	259778-1
Date extracted	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	20/01/2021
Date analysed	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	20/01/2021
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	114	108
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	90	85
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	92	79
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	114	108
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	90	85
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	92	79
Surrogate o-Terphenyl	%		Org-020	92	[NT]	[NT]	[NT]	[NT]	88	85

QUALITY CONTROL: PAHs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	259778-1
Date extracted	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	20/01/2021
Date analysed	-			22/01/2021	[NT]	[NT]	[NT]	[NT]	22/01/2021	22/01/2021
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	110
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	99	107
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	105	118
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	99	117
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	112
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	101	109
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	135	129
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	107	103
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	101	[NT]	[NT]	[NT]	[NT]	101	115

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	259778-1
Date prepared	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	20/01/2021
Date analysed	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	20/01/2021
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	100	102
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	97	74
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	99	87
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	100	110
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	97	78
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	107	107
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	98	77
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	96	72

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

SAMPLE RECEIPT ADVICE

Client Details

Client	AECOM Australia Pty Ltd (Sydney)
Attention	Kate Holt

Sample Login Details

Your reference	60619153/2g
Envirolab Reference	259778
Date Sample Received	19/01/2021
Date Instructions Received	19/01/2021
Date Results Expected to be Reported	27/01/2021

Sample Condition

Samples received in appropriate condition for analysis	YES
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	17.1
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: ahie@envirolab.com.au

Jacinta Hurst

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: jhurst@envirolab.com.au

Analysis Underway, details on the following page:



Sample ID	VOCs in soil	VTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Acid Extractable metals in soil
QC200_200113	✓	✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Generic Chain of Custody Form

A
Q4AN/E



CLIENT: AECOM	ADDRESS: Level 21, 420 George Street, Sydney	SAMPLER: Pankti Dalal	Destination Laboratory
MANAGER (P): Kate Holt	SITE: AGL BESS BH	MOBILE: M +61 488 213 287	ALS
NUMBER & TASK CODE: 60619153/2g	P.O. NO.:	EMAIL REPORT TO: pankti.dalal@aecom.com, kate.holt@aecom.com	
S REQUIRED (Date): Standard TAT		ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:																	
COOLER SEAL (Check appropriate) Place: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No N/A		Please send SRN ASAP, Please forward QC200 Eurofins ASAP and re-iced as appropriate. Please invoice anna.andrzajewski@aecom.com																	
SAMPLE TEMPERATURE CHILLED: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 102																			
SAMPLE INFORMATION (note: S = Soil, W = Water)					CONTAINER INFORMATION					TRH, BTEXN	TRH CG-63, BTEXN	BTEXN	Asbestos (absence/presence)	PH	Cation Exchange Capacity	Metals	PAHs	VOCs	HOLD
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type/ Code	Total Bottles													
1	QC300_210112	Water	12/01/2021		2 x vials, 1 x preserved metals, 1 x amber	4	X								X				Rinsate
2	QC301_210113	Water	13/01/2021		2 x vials, 1 x preserved metals, 1 x amber	4	X								X				Rinsate
3	QC302_210114	Water	14/01/2021		2 x vials, 1 x preserved metals, 1 x amber	4	X								X				Rinsate
4	QC200_200113	Soil	13/01/2021		1 x soil jar (glass)	1	X								X	X	X		Please forward to Envirolab ASAP
5	QC100_200112	Soil	12/01/2021		1 x soil jar (glass)	1	X								X	X	X		
6	QC400_200114	Soil	14/01/2021		1 x soil jar (glass)	1		X											Trip Blank
7	QC500_200114	Soil	14/01/2021		1 x soil jar (glass)	1			X										Trip Spike
8	Fragment 200114	Soil	14/01/2021		1 x ACM Bag	1				X									Potential ACM Fragment grab sample
9	Tank 0.0-0.1	Soil	14/01/2021		1 x soil jar (glass)	1	X			X		X	X	X	X	X	X		
10	Tank 0.1-0.2	Soil	14/01/2021		1 x soil jar (glass)	1	X					X	X	X	X	X	X		
11	Tank 0.2-0.3	Soil	14/01/2021		1 x soil jar (glass)	1	X					X	X	X	X	X	X		
12	Tank 0.3-0.4	Soil	14/01/2021		1 x soil jar (glass)	1	X					X	X	X	X	X	X		
13	BH003 0.0-0.1	Soil	12/01/2021		1 x soil jar (glass), 1 x small ACM bag	2	X			X		X	X	X	X	X	X		
14	BH003 0.5-0.6	Soil	12/01/2021		1 x soil jar (glass), 1 x small ACM bag	2	X					X	X	X	X	X	X		
15	BH003 0.7-0.8	Soil	12/01/2021		1 x soil jar (glass), 1 x small ACM bag	2	X					X	X	X	X	X	X		
16	BH002 0.0-0.3	Soil	12/01/2021		1 x soil jar (glass), 1 x small ACM bag	2	X					X	X	X	X	X	X		
17	BH004 0.0-0.3	Soil	12/01/2021		1 x soil jar (glass), 1 x small ACM bag	2	X					X	X	X	X	X	X		
18	BH005 0.0-0.1	Soil	13/01/2021		1 x soil jar (glass), 1 x small ACM bag	2	X					X	X	X	X	X	X		
19	BH005 0.4-0.5	Soil	13/01/2021		1 x soil jar (glass), 1 x small ACM bag	2	X					X	X	X	X	X	X		

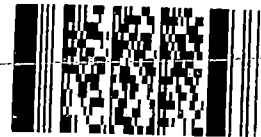
ENVIROLAB
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: **159778**
Date Received: **19/1/21**
Time Received: **1500**
Received By: **CM**
Temp: **Cool/Ambient**
Cooling: **In/No Pack**
Security: **Intact/Broken/None**

Name: Pankti Dalal		Date: 27/11/2020		Name: Vishal Patel		Date: 15/01/2021		Name: P. M. ...		Date: 19/1/21		METHOD OF SHIPMENT	
Of: AECOM		Time:		Of: ALS		Time: 1820		Of: ALS		Time: 1500		Con' Note No: Transport Co: Express courier	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Air/flight Unpreserved Plastic
V = VOA Val HCl Preserved; VB = VOA Val Sodium Bisulphate Preserved; VS = VOA Val Sulfuric Preserved; AV = Air/flight Unpreserved Val SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic;
F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

Environmental Division
Sydney
Work Order Reference
ES2101586



581

ANZ
FQM - Generic Chain of Custody Form

254778

CONSULTANT: AECOM		ADDRESS: Level 21, 420 George Street, Sydney		SAMPLER: Pankti Dalal		Destination Laboratory							
PROJECT MANAGER (P): Kate Holt		SITE: AGL BESS BH		MOBILE: M +61 488 213 287		PHONE:							
PROJECT NUMBER & TASK CODE: 60619153/2g		P.O. NO.:		EMAIL REPORT TO: pankti.dalal@aecom.com, kate.holt@aecom.com		Destination Laboratory ALS							
RESULTS REQUIRED (Date): Standard TAT				ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)									
ECR LABORATORY USE ONLY COOLER SEAL (circle appropriate) Intact: Yes No N/A SAMPLE TEMPERATURE CHILLED: Yes No		COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL: Please send SRN ASAP, Please forward QC200 Eurofins ASAP and re-iced as appropriate. Please invoice anna.andrzejewski@aecom.com		TRH, BTEXN	Asbestos (absence/presence)	pH	Cation Exchange Capacity	Metals	PAHs	VOCs	HOLD		
SAMPLE INFORMATION (note: S = Soil, W=Water)		CONTAINER INFORMATION											
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type/ Code	Total Bottles							
19	BH006_0.0-0.1	Soil	14/01/2021		1 x soil jar (glass), 1 x small ACM bag	2	X	X	X	X	X	X	
20	BH006_0.2-0.3	Soil	14/01/2021		1 x soil jar (glass), 1 x small ACM bag	2	X		X	X	X	X	
	Received extra sample												
21	BH001_0.0-0.1	soil	13/1/21										
22	TSC	soil	11/1/21										
RELINQUISHED BY:				RECEIVED BY				RECEIVED BY				METHOD OF SHIPMENT	
Name: Pankti Dalal		Date: 27/11/2020		Name: <i>Vishal</i>		Date:		Name: <i>15/01/2021</i>		Date:		Con' Note No:	
Of: AECOM		Time:		Of: <i>ALS</i>		Time:		Of: <i>1820</i>		Time:		Transport Co: Express courier	
Wafer Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.												Soil Container Codes: Jar = Unpreserved glass jar	

DRAFT

Appendix H

Calibration Certificates

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-118252**



Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	PID	✓	10.6 ev			
Alarms	Beeper	✓	Low	High	TWA	STEL
	Settings	✓	50ppm	100ppm		
Software	Version	✓				
Data logger	Operation	✓				
Download	Operation	✓				
Other tests:						

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		93ppm Isobutylene	NATA	SY361		92.3ppm

Calibrated by: _____ **Gary Needs**

Calibration date: **6/12/2021**

Next calibration due: **4/06/2022**