

Groundwater and soil investigation

771 Cudgen Road, Cudgen NSW

Lendlease

August 2019

Ref: 19038 R02



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Report Details**Report:**

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771 Cudgen Road,
Cudgen, NSW

Ref: 19038 R02

for

Lendlease

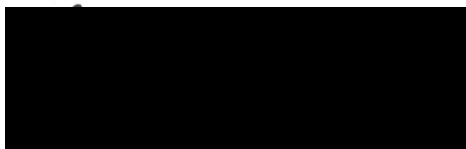
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1.0 Introduction

Cavvanba Consulting Pty Ltd (Cavvanba) was commissioned by Lendlease to undertake a groundwater and intrusive soil investigation for the proposed Tweed Valley Hospital, located at 771 Cudgen Road, Cudgen NSW.

The scope of work was detailed in Cavvanba's proposal to Lendlease, and associated acceptance of engagement on 30 May 2019. This report should be read in full, including the *General limitations to environmental information* outlined in Section 1.4.

1.1 Professional experience

Cavvanba is a specialist contaminated land consultancy and is suitably qualified to conduct the works. Cavvanba employees hold certified environmental practitioner (CEnvP) qualifications, which are nationally recognised competencies.

Cavvanba is a full member of the Australian Contaminated Land Consultants Association (ACLCA) in NSW and Queensland. ACLCA is an association that "represents the major environmental consulting firms involved in the assessment and management of contaminated sites in Australia".

Ben Wackett is a WorkCover NSW licensed asbestos assessor (LAA 000132), and an associate member of the Australian Institute of Occupational Hygienists (AIOH). Ben is also a NSW EPA accredited Site Auditor, under the *Contaminated Land Management Act 1997*.

Ben is a member of the Environmental Institute of Australia and New Zealand (EIANZ).

1.2 Background

The site consists of farmland as well as the features detailed below. It is understood that the previous owner had occupied the site for approximately 30 years and used it for agriculture. A residential house, garage and farm shed were located within the eastern portion of the site, prior to demolition in late 2018 and early 2019. The following features are currently present onsite:

- farm dam;
- farm dump; and
- farm pit (concrete sump feature).

It is understood that the site is proposed for development as the new Tweed Valley Hospital. Several investigations have been conducted by OCTIEF and Cavvanba, as detailed below:

- OCTIEF (2018) *Preliminary and detailed site investigation – 771 Cudgen Road, Cudgen, NSW 2487* (Ref. J8961);
- Cavvanba Consulting (2018) *Asbestos Clearance Certificate – Farm Dump* (Ref. 18084-CC04).
- Cavvanba (2019a) *Soil investigation report – Residential house, 771 Cudgen Road, Cudgen NSW* (Ref. 18084 R01 V2); and
- Cavvanba (2019b) *Soil investigation report – Farm Shed, 771 Cudgen Road, Cudgen, NSW* (Ref. 18084 R03 V2).

These investigations are further described in Section 3.0.

1.3 Objectives

The objectives of the groundwater and soil investigation report is to identify and assess the nature and extent of any existing or potential contamination at the site.

The scope of work included:

- Review of previous environmental investigations.
- Completion of a comprehensive site walkover and visual inspection for key features to identify potential areas of environmental concern on- and off-site.
- Advancement of 31 soil test pits/boreholes using a 12-tonne excavator and hand auger in a staged investigation (SL01 – SL29, SL31 and SL33). It should be noted samples were collected from soil boring locations SL30, SL32 and SL34 but not analysed.
- Collection and analysis of samples for potential contaminants of concern, which will assist in the classification of any material required for offsite disposal.
- Installation of six groundwater monitoring wells using a drill rig and or hand auger to depths of 1.5 m - 17 m.
- Development of groundwater monitoring wells.
- Collection of one round of groundwater samples from the installed monitoring wells to confirm findings.
- Collection of surface water from the farm pit and farm dam, and sediment from the farm dam.
- Surveying of elevation of monitoring wells by a registered surveyor.
- Inclusion of the results and findings into a report.

Guidance that will be considered in preparing this soil investigation report which includes:

- Department of Urban Affairs and Planning (1998) *State Environmental Planning Policy number 55: Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land*.
- NSW EPA (formerly Office of Environment and Heritage (OEH)) (2011) *Guidelines for Consultants Reporting on Contaminated Sites*.
- NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd edition)*.
- National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM (2013)) – Schedule B2: Guideline on Site Characterisation (2013)*.

The development application pathway for the Project consists of a staged Significant Development Application under section 4.22 of the Environmental Planning and Assessment Act 1979 (EP&A) Act. This report is provided to meet the requirements of SEPP 55 and Department of Planning and Urban Affairs (1998) *Planning Guidelines SEPP 55 – Remediation of Land*.

1.4 Limitations

The findings of this report are based on the objectives and scope of work outlined above. Cavanba performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties or guarantees, express or implied, are made. Subject to the scope of work, Cavanba's assessment is limited strictly to identifying typical environmental conditions associated with the subject property, and does not include evaluation of any other issues.

This report does not comment on any regulatory obligations based on the findings, for which a legal opinion should be sought. This report relates only to the objectives and scope of work stated, and does not relate to any other works undertaken for the Client.

The report and conclusions are based on the information obtained at the time of the assessment. Changes to the subsurface conditions may occur subsequent to the investigation described herein, through natural processes or through the intentional or accidental addition of contaminants, and these conditions may change with space and time.

The site history, and associated uses, areas of use, and potential contaminants, were determined based on the activities described in the scope of work. Additional site history information held by the Client, regulatory authorities, or in the public domain, which was not provided to Cavvanba or was not sourced by Cavvanba under the scope of work, may identify additional uses, areas of use and/or potential contaminants. The information sources referenced have been used to determine site history and desktop information regarding local subsurface conditions. While Cavvanba has used reasonable care to avoid reliance on data and information that is inaccurate or unsuitable, Cavvanba is not able to verify the accuracy or completeness of all information and data made available.

Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history, and which may not be expected at the site. The absence of any identified hazardous or toxic materials on the subject property, should not be interpreted as a warranty or guarantee that such materials do not exist on the site. If additional certainty is required, additional site history or desktop studies, or environmental sampling and analysis, should be commissioned.

The results of this assessment are based upon site inspection and fieldwork conducted by Cavvanba personnel and information provided by the Client. All conclusions regarding the property area are the professional opinions of the Cavvanba personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Cavvanba assumes no responsibility or liability for errors in any data obtained from regulatory agencies, information from sources outside of Cavvanba, or developments resulting from situations outside the scope of this project.

2.0 Site setting

2.1 Site identification

The site location and boundary are shown on Figure 1.

Owner:	Health Infrastructure NSW
Street address:	771 Cudgen Road, Cudgen NSW 2487
Property description:	Lot 11 Deposited Plan (DP) 1246853.
Site area:	Approximately 19.4 ha.
Investigation areas:	See Table 2.1 below.
Co-ordinates:	Latitude: -28.265041651 Longitude: 153.566689951.
Local government area:	Tweed Shire Council.
Elevation:	Approximately 27 m above AHD.
Landuse – existing:	Rural Residential/Agricultural.
Landuse – proposed:	Hospital.
Zoning – existing:	RU1 Primary Production.
Zoning – proposed:	SP2 Infrastructure (Hospital).

The site was split into five areas based on the site features and associated land use. A summary of the investigation areas is provided below.

Table 2.1: Summary of investigation areas

Area	Size (m ² - approximate)
Farm pit	315
Farm shed	750
Residential house	900
Farm dam	500
Farm dump	500

2.2 Surrounding land uses

The site is located in an area of mainly rural and recreational landuse, with the surrounding landuses identified as:

North: Agricultural land use, followed by bushland.

East: Cudgen Road followed by TAFE NSW Kingscliff and residential properties.

West: Agricultural land use.

South: Cudgen Road followed by agricultural land use.

2.3 Surrounding environment

The site is situated at approximately 27 m AHD. Cudgen Creek is located approximately 500 m to the south-east of the site.

These environments are considered to be sensitive receptors, the aquatic ecosystem and dependent species would be potential environmental receptors. Recreational users of the creek would be potential human receptors, including both primary (e.g. swimming) and secondary (e.g. boating) contact.

2.4 Topography

The site is relatively flat on the upper southern portion where the farm shed, farm pit and residential house are located. This area appears to be on top of a ridgeline.

There is an overall slope on-site, falling toward the north and the location of the dam.

2.5 Geology and soils

2.5.1 Geology

Based on NSW Environment & Heritage Soil and Land Information (eSPADE, accessed 18 July 2019), the site lies on Lamington Volcanics—Tertiary basalt, consisting of rhyolite, trachyte, tuff, agglomerate and conglomerate.

The landscape consists of very low to low undulating hills and rises on the Cudgen Plateau and nearby basalt caps. The elevation is 30–40 m on the Cudgen Plateau.

The vegetation in the area is cleared closed-forest (rainforest). Most of this landscape is cultivated, but the original vegetation would have been similar to that of the Limpinwood (li) or Green Pigeon (gp) soil landscapes.

2.5.2 Soils

Based on NSW Environment & Heritage Soil and Land Information (eSPADE, accessed 18 July 2019), the soil profile in the area consists of deep (>100 cm), well-drained red silty clay (Krasnozems). This soil profile description is consistent with the observations made during the investigation works at each of the five areas of concern.

3.0 Previous investigations

3.1 OCTIEF, 2018

OCTIEF conducted a preliminary and detailed investigation at the site in September 2018:

- OCTIEF (2018), *Preliminary and Detailed Site Investigation – 771 Cudgen Road, Cudgen, NSW 2487* (Ref. J8961).

The objectives of the investigation were to:

- identify potential sources of contamination and determine potential contaminants of concern;
- identify areas of potential contamination;
- provide Health Infrastructure NSW with high level confidence that site contamination characteristics are sufficiently understood to allow (if required) remedial planning and implementation;
- provide sufficient confidence and reliance that there will be no foreseeable contamination issues which may affect redevelopment or suitability for the State Significant Development Application (concept design and stage 1 works); and
- assess suitability of the site for rezoning (to SP2 Infrastructure) and the proposed land use (Hospital).

The scope comprised of an extensive soil and groundwater investigation which extended broadly over 771 Cudgen Road (Lot 11 DP 1246853). A total of 44 boreholes were advanced across the site, however it is noted that only seven of these boreholes are relevant to the investigation areas of this report (HA1 – HA4 and HA05 – HA07) and relevant samples were analysed for a range of potential contaminants. For completeness, these locations are shown on Figure 2 from the initial report, included as Appendix A.

ACM fragments were identified on the ground surface adjacent to the western side of the shed (HA1).

Soil samples were also collected from these locations and submitted for laboratory analysis for pesticides, metals, and petroleum hydrocarbons. Asbestos fibres (AF) and fibrous asbestos (AF) were detected at concentrations exceeding the residential guideline levels in a soil sample collected this location (HA1), adjacent to the western side of the farm shed at ~ 0.1 m depth.

It was also noted that:

- guttering which contained ACM was present on the western side of the farm shed, and was considered to be in relatively poor condition;
- other ACM was observed on the western edge of the shed roof; and
- small stockpiles containing ACM material were noted against the western wall of the shed.

OCTIEF (2018) prepared a remediation action plan for the area of asbestos impacted soil on the western side of the main shed:

- OCTIEF (2018) *Remediation action plan – Tweed Valley Hospital Site, 771 Cudgen Road, Cudgen NSW*. (Ref: J8961)

3.2 Cavvanba, 2018 – Farm dump

Cavvanba conducted an inspection of the farm dump on 13 December 2018 to evaluate whether asbestos containing materials were mixed with the wastes. Two representative samples of fibrous cement sheeting materials were collected and analysed for asbestos. Both samples reported no asbestos detected. Subsequently, a clearance certificate was issued for the farm dump:

- Cavvanba Consulting (2018) *Asbestos Clearance Certificate – Farm Dump* (Ref. 18084-CC04).

3.3 Cavvanba, 2019 – Residential house

Cavvanba conducted a contamination investigation at the site during November and December 2018, and July 2019, focussing on contaminants of lead and organochlorine pesticides (OCPs) associated with the residential house and garage:

- Cavvanba Consulting (2019), *Residential house – soil investigation report, 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R01).

The objectives of the soil investigation report were to address the potential site contamination issues associated with lead paint from the residential house and organochlorine pesticides (OCPs) associated with sub slab pest treatment underneath the garage.

The investigation included the advancement of 32 test pits to maximum explored depths of 0.6 m. Lead concentrations exceeding site criteria were present:

- underneath the former residential house in all four samples locations to 0.3 m depth;
- approximately 1 m from the eastern wall of the residential house, in the southern portion associated with TP06 to 0.1 m depth; and
- extending to 0.6 m depth at TP02 which had reported concentrations of 324 mg/kg which marginally exceeds site criteria.

In addition, aldrin and dieldrin were detected in one sample in excess of health screening levels, but following statistical analysis in accordance with NEPM, 2013, no further investigation/remediation was considered necessary.

Cavvanba prepared a remedial action plan for the area of lead impacted soil:

- Cavvanba (2019) *Remedial Action Plan Addendum – Residential House, 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R02 V2).

3.4 Cavvanba, 2019 – Farm shed

Cavvanba conducted a contamination investigation at the site during November and December 2018, focussing on asbestos, lead and organochlorine pesticides (OCPs) contamination associated with the farm shed:

- Cavvanba Consulting (2019), *Soil investigation report – Farm shed, 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R03).

The objectives of the soil investigation report were to address the potential site contamination issues associated with asbestos containing materials (ACM), potential lead paint from the farm shed and organochlorine pesticides (OCPs) associated with sub slab pest treatment underneath the farm shed.

The investigation included the advancement of 21 test pits to maximum explored depths of 0.3 m. Asbestos contamination is believed to be limited to:

- approximately 1 m from the north-eastern wall of the farm shed;
- approximately 3 m from the south-western wall of the farm shed; and
- no deeper than 0.3 m below the ground surface.

Cavvanba prepared a remedial action plan for the area of asbestos impacted soil:

- Cavvanba (2019) *Remedial Action Plan Addendum – Farm Shed, 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R04 V2).

4.0 Site inspection

During the investigation, a site inspection was undertaken to confirm anecdotal evidence and consolidate the findings of the information review through physical inspection of potential contaminant sources, pathways and receptors.

4.1 Site observations

Multiple site inspections were undertaken by Glen Chisnall and Ross Nicolson of Cavanba during July 2019. A photographic log has been provided as Appendix B.

The following observations, relevant to the use and environmental condition of the investigation areas were made:

Farm pit

Observations made of the farm pit are described below:

- a concrete feature is present in the centre of the investigation area;
- the pit feature consisted of a concrete slab (approximately 10 m in length, 1.5 m in width and 0.3 m in depth), which drained into an adjacent pit which was approximately 0.8 m in depth;
- green ('copper-like') staining was present at the surface of concrete slab, and the concrete slab appeared to be shaped to contain liquid and drain towards the pit;
- the pit feature was half filled with fluid and contained hypodermic syringes, buckets, styrofoam, rags and other general waste;
- the grass surface was observed to be in good condition around the edges of the concrete slab with no visible staining; and
- a large fig tree is present to the south west of the farm pit feature.

Refer to Figure 2 for the farm pit location map.

Farm shed

Observations made of the farm shed are described below:

- ~200 mm of clean gravel is present at the surface of the investigation area (within the former footprint of the farm shed);
- this is followed by geofabric material and underlying red to brown silty clay soil;
- a power pole is present in the centre of the investigation area;
- the grass surface is in good condition around the former footprint of the farm shed with no visible staining; and
- a gravel road entered the site from Cudgen Road before entering into the carpark area.

Refer to Figure 3 for the farm shed location map.

Residential house

Observations made of the residential house are described below:

- the footprint of the residential house had been lined with geofabric material and ~ 200 mm of clean gravel is present at the surface as a capping layer;
- a small sediment fence is present around the perimeter of the residential house; and
- the grass surface outside this area was observed to be in good condition around the edges of the fence with no visible staining or contamination present.

Refer to Figure 4 for the residential house location map.

Farm dump

Observations made of the farm dump are described below:

- sporadic waste materials from fly-tipping, consisting of corrugated iron, cement sheeting, plastic hosing, star pickets and bricks are present on the ground surface along the north-western corner of the site (farm dump investigation area);
- the waste materials extend over an area of approximately 500 m²; and
- the grass surface was observed to be in good condition in close proximity to the waste. No visible staining was identified.

Refer to Figure 6 for the farm dump location map.

Farm dam

Observations made of the farm dam are described below:

- native bushland is present to the north of the farm dam;
- the dam itself was covered in vegetation and the water was observed to be clear with no odour or sheen; and
- the patch of grass to the south of the dam was observed to be in good condition with no visible staining.

Refer to Figure 5 for the farm dam location map.

5.0 Soil assessment

5.1 Data quality objectives (DQO's planning process)

Cavvanba implemented the data quality objectives (DQOs) planning process at the beginning of the investigation in order to define the type, quality and quantity of the data needed, and to determine project-wide requirements. The DQOs (Ref. 19038 R01 DQOs and SAQP) have not been reproduced herein and should be referred to for decision rules and statements, and further details of sampling methodology, justification of contaminants of concern, and adopted criteria, etc. the outcomes of which were used to determine the site assessment described below.

The DQOs involved the development of decision rules specific to the potential contamination issues at the site, in context of the proposed land use and investigation areas. These decision rules were developed to refine the objectives of the data collection investigation, to ensure the data collected was representative and provided the necessary data to allow the evaluation of the sites landuse suitability and/or remediation options. The DQOs also considered the decision-making process for urban redevelopment sites, as per DEC 2006 and NEPM as amended 2013.

The contaminants, media and environmental criteria are summarised below, based on the DQO outputs.

5.2 Contaminants of concern

The potential contaminants of concern (PCOCs) are summarised in Table 5.1 below:

Table 5.1: PCOCs

PCOCs	Description and common relationship
<i>Primary PCOCs</i>	
TRHs	Total recoverable hydrocarbons including volatile fractions (C ₆ – C ₉ TRHs) and semi-volatile fractions (C ₁₀ – C ₃₆ TRHs). Fuels, oils and grease, fill material, solvents.
BTEXN	Benzene, toluene, ethyl benzene, xylenes and naphthalene. Volatile hydrocarbons. Fuel constituents, fill materials, solvents.
PAHs	Polycyclic aromatic hydrocarbons. Semi-volatile hydrocarbons. Constituents in bitumen, tar, asphalt, fuel constituents, oil, grease, ash.
Heavy metals	arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni) and zinc (Zn). Fill, fuels/oils, pest control, fertilisers, metal working, buildings, fences, urban runoff, electrical components, etc.
Asbestos	Asbestos in the form of free fibres and asbestos containing materials (ACMs). Commonly used in pipework, buildings (fibro), etc.
OCPs and OPPs	Organochlorine and organophosphorus pesticides. Pest control/fertilisers. OPPs are broken down in an oxygenated environment, while OCPs are persistent in the environment.
PCBs	Polycyclic biphenyls. Constituents in electrical equipment, fill, etc. Not considered to be a primary contaminant of concern at this stage.

5.3 Relevant environmental media

The environmental media considered relevant for the investigation consisted of site soils, groundwater and surface water.

5.4 Relevant environmental criteria

5.4.1 Soil

For soil, the appropriate criteria are based on the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) (2013) and in particular the health investigation levels (HILs), environmental investigation levels (EILs), environmental screening levels (ESLs) and health screening levels (HSLs) applicable for residential landuses.

HSLs and ESLs – soil type

Due to the silty clay nature of the site, silt criteria has been used as the soil type for conservative purposes for deriving the HSLs and ESLs.

EILs

The EILs for metals have been adopted for aged contamination using the generic parameters included in the EIL calculator. Derivation of site-specific EILs was not conducted as part of this investigation.

5.4.2 Asbestos in soil

It should be noted that the proposed use of the site is a public hospital. Cavvanba has therefore adopted site-specific investigation screening criteria. The screening criteria is a combination of no visual observations of ACM as well as non-detects of asbestos fibres in soil.

ASC NEPM 2013 states that the NEPM HILs are not protective of construction workers, and site specific risk should be taken into consideration: (Schedule B7: Guideline on health-based investigation levels – Section 3.1) *The HILs are therefore considered to be protective of exposures to other receptor populations; however, the HILs do not specifically address short-duration exposures that may occur during construction and maintenance of a site (including intrusive works). These exposures should be addressed on a site-specific basis.*

Based on this, elimination of asbestos was seen as a more appropriate criteria for handing the site over from the demolition stage to the construction stage. This also takes into consideration the following points:

- the small area of asbestos present is likely to be limited and can be feasibly removed from the site;
- there are inherent and unavoidable uncertainties associated with the uneven distribution of ACM found on these types of sites, therefore a conservative approach has been adopted;
- there is a high level of public interest in this site, and eliminating asbestos issues for construction workers is considered appropriate, rather than to conveying risk to future workers by relying on criteria thresholds of asbestos concentrations in soil; and
- there are proposed construction works and the HILs for commercial/industrial landuse were not developed to be specifically protective of construction workers.

5.4.3 Groundwater and surface water

For waters, the appropriate criteria are based on the *National Environment Protection (Assessment of Site Contamination) Measure* (NEPM) (2013) and in particular those applicable for the protection of freshwater water ecosystems. It is specified that the 95%

species protection levels are to be applied for slightly to moderately-disturbed ecosystems (most urban catchments), and the 99% species protection levels for pristine or vulnerable ecosystems, or where the contaminants are intractable (e.g. bioaccumulative).

The drinking water criteria from *NHMRC/NRMMC* (2011) and *NHMRC* (2008) with respect to recreational water use will be adopted in this assessment for comparison purposes. *NHMRC* recommend applying a multiplication factor of 10 to 20 to the Australian Drinking Water Guidelines for assessment of the acceptability of recreational water quality.

The Guidelines on the Duty to Report Contamination under the Contaminated Land Management (CLM) Act 1997 (EPA, September 2015) describes where contamination is considered *significant enough to warrant regulation*, and requires reporting to EPA. This includes scenarios where groundwater concentrations exceed the drinking water criteria (in combination with other factors).

6.0 Site assessment

The field work was undertaken in general accordance with the DQOs. Field works were conducted on:

- 1, 2 and 11 July for the soil and surface water investigation; and
- 16 July for the groundwater investigation.

All fieldwork was completed by Glen Chisnall of Cavanba Consulting. The sampling and analytical strategy and methodology are described below. The results of the assessment are provided in Section 8. Soil sample locations are shown on Figures 2 – 6 with respect to the representative investigation areas.

6.1 Sampling strategy

6.1.1 Soil and concrete

A total of 31 soil borings/test pits were advanced across the site on 1, 2 and 11 July 2019, to target specific infrastructure, land use practices and/or events which may represent potential sources of contamination. The rationale for each sampling location is further detailed in Table 6.1, below.

Table 6.1: Rationale for sampling design

Location ID	Rationale
<i>Farm pit</i>	
CS01 – CS02	Targeting the concrete slab material, and the potential for chemicals to impregnate the concrete.
SL01 – SL03	Targeting the area immediately around the farm pit, associated with spills.
SL04, SL05 and SL12	Targeting the soil located underneath the concrete slab, to investigate the potential of cracks in the concrete slab providing a preferential pathway.
SL06 – SL11	Providing broad spatial coverage across the investigation area/targeting the perimeter of the farm pit and concrete slab.
<i>Farm pit delineation sampling/analysis</i>	
SL29, SL31 and SL33	Further sampling/analysis conducted ~ 2 m to the north, south and east of SL11; to delineate the lateral extent of benzo(a)pyrene TEQ impact.
SL30, SL32 and SL34	Further sampling/analysis conducted ~ 4 m to the north, south and east of SL11; to delineate the lateral extent of benzo(a)pyrene TEQ impact. Samples collected but not analysed.
<i>Farm shed</i>	
SL13 – SL18	Providing broad spatial coverage across the remediation area for the farm shed.
<i>Residential house</i>	
SL19 – SL22	Providing broad spatial coverage across the residential house remediation area.
<i>Farm dam</i>	

Location ID	Rationale
SL23	Targeting the area of cleared bushland located to the south of the farm dam.
<i>Farm dump</i>	
SL24 – SL28	Providing broad spatial coverage across the farm dump investigation area.

6.1.2 Groundwater and surface water

To evaluate the impact and extent of groundwater and surface water contamination present onsite, six monitoring wells were installed and two surface water locations were sampled. Monitoring well locations were chosen to target potential contamination sources and provide triangulation for groundwater flow direction purposes. The monitoring well locations, surface water sampling locations and strategy is detailed in Table 6.2 below and shown on Figures 7 and 8.

Table 6.2: Groundwater and surface water sampling and analytical strategy

Well/surface water location	Strategy	Analysis
Monitoring wells		
MW01	Upgradient – approximately 10 m east of farm pit/concrete structure.	TRH, BTEXN, PAHs, OCPs, PCBs, heavy metals (dissolved for groundwater).
MW02	Central - located as close as possible to the farm pit.	
MW03	Downgradient – Located to the north-west of the farm pit	
MW04	Central/downgradient of the farm shed and pit.	
MW05	Central – located next to the farm dam.	
MW06	Central – located within the farm dump.	
Surface water locations		
SW_DIP	Central – located within the farm pit sump feature.	TRH, BTEXN, PAHs, OCPs, PCBs, heavy metals (total for surface water).
SW_DAM	Central – located within the farm dam.	

6.2 Methodology

6.2.1 Soil

Farm pit, farm shed and residential house

Test pits were excavated at pre-marked locations using a twelve-tonne excavator, with a 450 mm diameter bucket. This method allowed for assessment to the required depth. This is a time efficient strategy which allows superior visual evaluation for contaminants, soil conditions and identifying the presence/absence of ACM.

Soil samples were collected from the centre of the excavator bucket, ensuring that soil sampled had not been in direct contact with the bucket.

Farm dam and farm dump

Soil borings were advanced using stainless steel hand tools, ensuring that soil sampled had not been in direct contact with the hand tool. An excavator was not considered suitable given the limited access to the farm dam and dump. Soil borings at these locations were to a maximum explored depth of 0.5 m.

All soil samples were collected into laboratory supplied glass jars and placed directly into chilled eskies and immediately transported to the laboratory under chain of custody documentation, in accordance with Cavvanba fieldwork procedures.

6.2.2 Groundwater

Monitoring wells were installed using a track-mounted drill rig with a solid flight auger (MW01 – MW04) and a stainless-steel hand auger with a diameter of 62 mm (MW05 – MW06). For MW01 – MW04, solid flight augers were used until rock was encountered, followed by air hammer drilling to the required depth.

Groundwater well construction is consistent with the *Minimum Construction Requirements for Water Bores in Australia* (Land and Water Biodiversity Committee, 2003). Monitoring wells were installed to a maximum depth of 17 m, and screened in the first water bearing zone encountered. All wells were constructed of 50 mm diameter Class 18 uPCV casing and screen, with a bentonite seal above the screen. Groundwater wells were developed following installation.

A new disposable bailer was used for each well, and a minimum of three wells volumes was removed from the well.

Groundwater sampling was conducted 5 days following installation of the groundwater monitoring wells.

Groundwater sampling was conducted on 16 July 2019. All sampling was completed by Glen Chisnall of Cavvanba Consulting, using a disposable bailer in wells MW01 – MW04 where groundwater was greater than 7 m below the ground surface. A peristaltic pump was used in well MW05 where groundwater was less than 7 m below the ground surface. This was conducted in accordance with *Cavvanba Fieldwork Procedures for Groundwater sampling*, which generally meets NEPM requirements. All wells were inspected for the presence of LNAPL, gauged and sampled. Monitoring well MW06 was noted as dry and unable to be sampled.

To ensure representative samples were collected:

- water was collected into a flow-through cell and or bailer for the collection of water quality parameters, including pH, temperature, conductivity, redox and dissolved oxygen (DO), which were measured using a calibrated Horiba water quality meter; and
- water quality parameters recorded consecutive readings within 10% prior to sampling.

Groundwater parameter probe calibration records are included in Appendix C, monitoring well installation logs are included in Appendix D, and groundwater sampling sheets are included in Appendix E.

Samples were collected directly from single use bailer and or disposable tubing into appropriately preserved laboratory prepared and supplied sample bottles and quickly capped with no headspace remaining to minimise the loss of any volatiles. It should be noted that a new length of tubing was used at each monitoring well. A new pair of nitrile gloves were worn for each location.

All groundwater samples were collected into laboratory supplied bottles, in accordance with Cavvanba fieldwork procedures. All samples were placed directly into chilled eskies and transported to the laboratory under chain of custody documentation.

6.2.3 Surface water

Surface water sampling was conducted using appropriately laboratory prepared and supplied sample bottles and quickly capped with no headspace remaining to minimise the loss of any volatiles.

An unpreserved bottle was attached to an extendable pole and was submerged in the water body at the farm dam. The sample was then decanted into an appropriate preserved bottle where necessary. All care was taken to avoid turbulence.

A pair of disposal gloves will be worn during collection and all surface water samples will be placed directly into chilled eskies and transported to the laboratory under chain of custody documentation.

6.3 Data usability

A background to data usability is provided in Appendix F. All site work was completed in accordance with standard Cavvanba sampling protocols, including a QA/QC programme and fieldwork procedures.

A data usability assessment has been performed for the sampling undertaken during this investigation, as summarised in Appendix F and includes:

- summary of field quality assurance/quality control;
- field quality control soil samples summary; and
- summary of laboratory quality assurance/quality control.

Overall, the data usability assessment shows that the data is of suitable quality to support the conclusions made in this report.

7.0 Conditions encountered

The subsurface conditions encountered are summarised below. For descriptions of the subsurface conditions at specific locations, refer to Table 1, attached. A photographic log is provided as Appendix B.

7.1 Soil conditions

The soil profile identified across the site consisted of either natural or disturbed natural, consisting of dark brown to red silty clay to maximum depths of 1.1 m. This was followed by light grey shale rock to the maximum explored depth of 17.0 m.

7.1.1 Disturbed natural soil

Disturbed natural soil was observed at the surface in all of the test pits located around the farm shed.

7.2 Groundwater

Monitoring wells were installed as flush mounted – i.e. being level with the ground surface (MW01 – MW04) and with an approximate 1 m stickup (MW05 – MW06). Groundwater levels were observed to be between 1.660 m (MW05 – 1 m stickup) and 12.240 m (MW03 – flush mounted) depth below casing during sampling.

The top of the casing (TOC) of the plastic pipes were surveyed by B&P Surveys for all monitoring wells. B&P Surveys are licensed and registered surveyors and the wells were recorded in relation to Australian height datum (m AHD).

The measured elevations were used to calculate groundwater elevations to assist in estimating the likely groundwater flow direction. The SWLs are shown in Table 7.1, below:

Table 7.1: Groundwater well survey results

Location	Date sampled	Relative level mAHD (top of well casing)	Standing water level (m BTOC)	Depth encountered during drilling (m BTOC)	Groundwater elevation (RL minus SWL)
MW01	16/07/19	25.952	11.565	~ 12 m	14.387
MW02	16/07/19	25.877	11.900	~ 12 m	13.977
MW03	16/07/19	26.651	12.120	~ 12 m	14.531
MW04	16/07/19	26.242	12.240	~ 12 m	14.002
MW05	16/07/19	2.030	1.660	~ 12 m	0.370
MW06	Dry				

The groundwater elevation at MW01 – MW04 (southern portion) was approximately 14 m and 0.370 m at MW05 (northern portion). It is therefore anticipated groundwater flows to the north from the higher point of elevation around the farm pit, farm shed and residential house down towards the farm dump and farm dam. Generally, the depth to groundwater encountered during drilling was similar to the stabilised level. This suggests the groundwater is not under confined conditions.

The groundwater quality parameters recorded prior to groundwater sampling are shown in Table 7.2.

Table 7.2: Groundwater quality parameters

Sample location	Date sampled	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox as Eh (mV)	Comments
<i>Groundwater quality parameters</i>							
MW01	16/07/19	7.02	0.426	20.66	2.15	343	Slightly turbid. No odour or sheen
MW02	16/07/19	7.06	0.383	21.15	1.75	340	Clear, no odour or sheen.
MW03	16/07/19	6.25	0.298	21.83	0.88	363	Clear, no odour or sheen.
MW04	16/07/19	6.24	0.405	21.83	3.48	363	Clear, no odour or sheen.
MW05	16/07/19	6.64	0.275	20.39	1.87	338	Clear then turbid, no odour or sheen.
MW06	16/07/19	Well dry, unable to be sampled.					

Notes:

DO = dissolved oxygen.

H₂S = Hydrogen sulphide (reducing odour).

Cond. = conductivity.

Redox value has been corrected for standard hydrogen electrode by adding 199.

Redox range, <0 mV reducing, 0 – 400 mV moderately reducing, >400 mV well oxygenated.

Based on the groundwater well quality parameter measurements, the groundwater underlying the site can be described as relatively neutral, oxygenated, and slightly reducing.

8.0 Analytical results

The results are summarised below by contaminant. Analytical summary tables have been provided for each of the five investigation areas as listed below:

- 1) farm pit;
- 2) farm shed;
- 3) residential house;
- 4) farm dam; and
- 5) farm dump.

The laboratory analytical reports are included in Appendix G. The analytical results have been compared to the screening criteria adopted for the site. The NEPM health investigation and screening levels for residential land use (HIL A) have been used along with the ecological investigation levels (EILs) for urban residential and public open space to ascertain the magnitude of impacts. Asbestos criteria is site specific as described in Section 5.3.2.

8.1 Farm pit analytical results

Analytical results for the farm pit are summarised in the subsequent sections for the following media:

- soil;
- concrete; and
- surface water.

8.1.1 Soil

The soil analytical results from the farm pit investigation are summarised below in Table 8.1, and exceedances of health screening criteria are shown on Figure 2.

Table 8.1: Soil analytical summary

Analyte	Health criteria 0m to <1m	Ecological criteria	Management Limits	Site data			
	HIL / HSL (mg/kg)	EIL/ESL (mg/kg)	ML (mg/kg)	No. samples analysed	Number of exceedances	Max' (mg/kg)	Meets screening criteria?
Heavy metals							
Arsenic	100	100	-	16	0	19	Yes
Cadmium	20	-	-		0	11	Yes
Chromium	100	410	-		0	46	Yes
Copper	6,000	<u>230</u>	-		2	<u>2,540</u>	No
Lead	300	1,100	-		0	136	Yes
Nickel	400	270	-		0	99	Yes
Zinc	7,400	<u>770</u>	-		4	<u>3,980</u>	No
Mercury	40	-	-		0	0.2	Yes
TRH and BTEXN							
Benzene	0.6	10 ⁵	-	16	0	<0.5	Yes
Toluene	390	65 ⁵	-		0	<0.5	Yes
Ethylbenzene	NL	40 ⁵	-		0	<0.5	Yes
Meta - & para - Xylenes	95	1.6 ⁵	-		0	<0.5	Yes
Ortho-xylene			-		0	<0.5	Yes
Naphthalene	4	170	-		0	<0.5	Yes

Analyte	Health criteria 0m to <1m	Ecological criteria	Management Limits	Site data			
	HIL / HSL (mg/kg)	EIL/ESL (mg/kg)	ML (mg/kg)	No. samples analysed	Number of exceedances	Max' (mg/kg)	Meets screening criteria?
F1 TRHs C ₆ -C ₁₀	40	180 ⁵	-		0	<10	Yes
F2 TRHs >C ₁₀ - C ₁₆	230	<u>120</u> ⁵	-		1	<u>120</u>	No
F3 TRHs >C ₁₆ – C ₃₄	NL	<u>1,300</u> ⁵	-		1	<u>2,170</u>	No
F4 TRHs >C ₃₄ – C ₄₀	NL	5,600 ⁵	-		0	180	Yes
PAHs							
Benzo(a)pyrene	NL	<u>0.7</u>	-	23	1	<u>4.7</u>	No
B(a)P TEQ	3	NL	-		1	7.1	No
Total PAHs	300	NL	-		0	71.3	Yes
Polychlorinated Biphenyls and Organochlorine pesticides							
Heptachlor	6	NL	-	16	0	<0.05	Yes
Total Chlordane (sum)	50	NL	-		0	<0.05	Yes
Endrin	10	NL	-		0	<0.05	Yes
Endosulfan (sum)	270	NL	-		0	<0.05	Yes
Methoxychlor	300	NL	-		0	<0.2	Yes
Sum of Aldrin + Dieldrin	6	NL	-		0	<0.05	Yes
Sum of DDD + DDE + DDT	240	180	-		0	<0.05	Yes
PCBs	1	-	-		0	<0.1	Yes
Asbestos							
Asbestos	Detect	-	-	16	0	Non detect	Yes

Table notes:

1 * Criteria for DDT only.

2 - No criteria available.

3 - **BOLD** indicates exceedance of HILs/site-specific asbestos criteria.

4 - Underscore indicates exceedances of EILs criteria.

Health investigation or screening criteria was exceeded as follows:

- sample SL11_0.1 exceeded the HILs for B(a)P TEQ with a reported concentration of 7.1 mg/kg (>100% of criteria).

Environmental investigation or screening criteria was exceeded as follows:

- two samples (SL02_0.1 and SL03_0.1) exceeded the copper EIL with a maximum reported concentration of 2,540 mg/kg;
- four samples (SL01_0.1, SL02_0.1, SL08_0.1, SL11_0.1) exceeded the zinc EIL with a maximum reported concentration of 3,980 mg/kg;
- sample SL01_0.1 exceeded the EIL for TRHs C₁₀ - C₁₆ with a maximum reported concentration of 120 mg/kg;
- sample SL02_0.1 exceeded the EIL for TRHs C₁₆ - C₃₄ with a maximum reported concentration of 2,170 mg/kg; and
- sample SL11_0.1 exceeded the EIL for Benzo(a)pyrene with a maximum reported concentration of 4.7 mg/kg.

8.1.2 Concrete

Two samples were collected and analysed of the concrete of the farm pit. Health investigation criteria was exceeded for copper with a maximum reported concentration of 12,200 mg/kg (>200% criteria) in sample CS_02.

Ecological investigation criteria was exceeded in concrete samples CS_01 and CS_02 with respect to zinc EILs with a maximum reported concentration of 1,590 mg/kg, as well as TRH F3 with a maximum reported concentration of 9,440 mg/kg.

8.1.3 Farm pit water

The farm pit water analytical results are summarised on Tables 8-11.

Metals

One water sample (SW-DIP) was taken from inside the farm pit feature. Marine water and drinking water criteria were exceeded with respect to heavy metals. A summary is provided below:

- arsenic exceeded the marine waters and drinking water criteria with a maximum reported concentration of 4 ug/L;
- Cadmium exceeded the marine and drinking water criteria with a maximum reported concentration of 3.3 ug/L;
- chromium exceeded marine water criteria with a maximum reported concentration of 4.4 ug/L;
- copper exceeded marine waters and drinking criteria with a maximum reported concentration of 1,230 ug/L;
- lead exceeded marine waters and drinking criteria with a maximum reported concentration of 22 ug/L;
- nickel exceeded marine water criteria with a maximum reported concentration of 7 ug/L; and
- zinc exceeded marine waters and drinking criteria with a maximum reported concentration of 4,820 ug/L;

Hydrocarbons

TRHs and PAHs were also detected in the pit water sample (SW-DIP). TRH >C10 – C40 concentrations were 34,800 µg/L. PAHs concentrations were 1,200 µg/L and consisted of 99% acenaphthene.

Naphthalene exceeded freshwater criteria in the field duplicate sample taken from the farm pit with a maximum reported concentration of 45.5 ug/L. The duplicate sample (QW01) was reported for conservative purposes due to the significantly higher concentrations comparatively to the primary (SW_DIP).

Figure 2 shows the location of the farm pit water and details the exceedances.

OCPs and PCBs

No OCPs and/or PCBs were detected in excess of the laboratory limit of reporting in the sample collected from the farm pit.

8.2 Farm shed soil analytical results

The soil analytical results from the farm pit investigation are summarised in Table 8.2 on the following page.

Table 8.2: Soil analytical summary

Analyte	Health criteria 0m to <1m	Ecological criteria	Management Limits	Site data			
	HIL / HSL (mg/kg)	EIL/ESL (mg/kg)	ML (mg/kg)	No. samples analysed	Number of exceedances	Max' (mg/kg)	Meets screening criteria?
Heavy metals							
Arsenic	100	100	-	13	0	11	Yes
Cadmium	20	-	-		0	2	Yes
Chromium	100	410	-		0	31	Yes
Copper	6,000	230	-		0	142	Yes
Lead	300	1,100	-		0	82	Yes
Nickel	400	270	-		0	15	Yes
Zinc	7,400	770	-		2	1,190	No
Mercury	40	-	-		0	0.2	Yes
TRH and BTEXN							
Benzene	0.6	10 ⁵	-	13	0	<0.5	Yes
Toluene	390	65 ⁵	-		0	<0.5	Yes
Ethylbenzene	NL	40 ⁵	-		0	<0.5	Yes
Meta - & para - Xylenes	95	1.6 ⁵	-		0	<0.5	Yes
Ortho-xylene			-		0	<0.5	Yes
Naphthalene	4	170	-		0	<0.5	Yes
F1 TRHs C ₆ -C ₁₀	40	180 ⁵	-		0	<10	Yes
F2 TRHs >C ₁₀ - C ₁₆	230	120 ⁵	-		0	<50	Yes
F3 TRHs >C ₁₆ - C ₃₄	NL	1,300 ⁵	-		0	160	Yes
F4 TRHs >C ₃₄ - C ₄₀	NL	5,600 ⁵	-		0	<100	Yes
PAHs							
Benzo(a)pyrene	NL	0.7	-	13	0	<0.5	Yes
B(a)P TEQ	3	NL	-		0	<0.5	Yes
Total PAHs	300	NL	-		0	<0.5	Yes
Polychlorinated Biphenyls and Organochlorine pesticides							
Heptachlor	6	NL	-	13	0	<0.05	Yes
Total Chlordane (sum)	50	NL	-		0	<0.05	Yes
Endrin	10	NL	-		0	<0.05	Yes
Endosulfan (sum)	270	NL	-		0	<0.05	Yes
Methoxychlor	300	NL	-		0	<0.2	Yes
Sum of Aldrin + Dieldrin	6	NL	-		0	<0.05	Yes
Sum of DDD + DDE + DDT	240	180	-		0	<0.05	Yes
PCBs	1	-	-		0	<0.1	Yes
Asbestos							
Asbestos	Detect	-	-	13	1	Detect	No

Health investigation or screening criteria was exceeded as follows:

- sample SL16_0.1 had detections of asbestos fibres in soil which exceeds the site-specific asbestos criteria. No asbestos was detected in soil at SL16 at 0.5 m depth, suggesting the impact was limited to shallow depths.

Ecological investigation criteria for zinc was exceeded in two samples (SL13_0.1 and SL17_0.1) with a maximum reported concentration of 1,190 mg/kg.

8.3 Residential house soil analytical results

The soil analytical results from the residential house investigation are summarised below in Table 8.3.

Table 8.3: Residential house analytical results

Analyte	Health criteria 0m to <1m	Ecological criteria	Management Limits	Site data			
	HIL / HSL (mg/kg)	EIL/ESL (mg/kg)	ML (mg/kg)	No. samples analysed	Number of exceedances	Max' (mg/kg)	Meets screening criteria?
<i>Heavy metals</i>							
Lead	300	1,100	-	4	2	385	No

Health investigation criteria for lead was exceeded in two samples (SL21_0.1 and SL22_0.1) with a maximum reported concentration of 385 mg/kg.

No exceedances of ecological criteria were reported.

8.4 Farm dam analytical results

Analytical results for the farm pit are summarised in the subsequent sections for the following media:

- soil;
- surface water; and
- sediment.

8.4.1 Soil

The soil analytical results from the farm dam investigation are summarised below in Table 8.4.

Table 8.4: Farm dam soil analytical results

Analyte	Health criteria 0m to <1m	Ecological criteria	Management Limits	Site data			
	HIL / HSL (mg/kg)	EIL/ESL (mg/kg)	ML (mg/kg)	No. samples analysed	Number of exceedances	Max' (mg/kg)	Meets screening criteria?
<i>Heavy metals</i>							
Arsenic	100	100	-	2	0	<5	Yes
Cadmium	20	-	-		0	<1	Yes
Chromium	100	410	-		0	9	Yes
Copper	6,000	230	-		0	52	Yes
Lead	300	1,100	-		0	11	Yes
Nickel	400	270	-		0	20	Yes

Analyte	Health criteria 0m to <1m	Ecological criteria	Management Limits	Site data			
	HIL / HSL (mg/kg)	EIL/ESL (mg/kg)	ML (mg/kg)	No. samples analysed	Number of exceedances	Max' (mg/kg)	Meets screening criteria?
Zinc	7,400	770	-		0	174	Yes
Mercury	40	-	-		0	0.2	Yes
TRH and BTEXN							
Benzene	0.6	10 ⁵	-	2	0	<0.5	Yes
Toluene	390	65 ⁵	-		0	<0.5	Yes
Ethylbenzene	NL	40 ⁵	-		0	<0.5	Yes
Meta - & para - Xylenes	95	1.6 ⁵	-		0	<0.5	Yes
Ortho-xylene			-		0	<0.5	Yes
Naphthalene	4	170	-	2	0	<0.5	Yes
F1 TRHs C ₆ -C ₁₀	40	180 ⁵	-		0	<10	Yes
F2 TRHs >C ₁₀ - C ₁₆	230	120 ⁵	-		0	<50	Yes
F3 TRHs >C ₁₆ - C ₃₄	NL	1,300 ⁵	-		0	<100	Yes
F4 TRHs >C ₃₄ - C ₄₀	NL	5,600 ⁵	-		0	<100	Yes
PAHs							
Benzo(a)pyrene	NL	0.7	-	2	0	<0.5	Yes
B(a)P TEQ	3	NL	-		0	<0.5	Yes
Total PAHs	300	NL	-		0	<0.5	Yes
Polychlorinated Biphenyls and Organochlorine pesticides							
Heptachlor	6	NL	-	2	0	<0.05	Yes
Total Chlordane (sum)	50	NL	-		0	<0.05	Yes
Endrin	10	NL	-		0	<0.05	Yes
Endosulfan (sum)	270	NL	-		0	<0.05	Yes
Methoxychlor	300	NL	-		0	<0.2	Yes
Sum of Aldrin + Dieldrin	6	NL	-		0	<0.05	Yes
Sum of DDD + DDE + DDT	240	180	-		0	<0.05	Yes
PCBs	1	-	-		0	<0.1	Yes
Asbestos							
Asbestos	-	-	-	2	0	-	Yes

The findings of the investigation at the farm dam indicated that reported analytical concentrations in soil were below the adopted human health and ecological screening criteria in all samples collected and analysed.

8.4.2 Farm dam water

One surface water sample (SW_DAM) was taken from the farm dam. Marine water criteria were exceeded for zinc with a maximum reported concentration of 15 ug/L. All remaining analytes were reported below the adopted criteria.

Analytical results are summarised on Tables 8-11.

8.4.3 Farm dam sediment

A sediment sample (SS01) was taken from the farm dam. No concentrations of contaminants were reported below the adopted criteria.

8.5 Farm dump soil analytical results

The soil analytical results from the farm dump investigation are summarised below in Table 8.5.

Table 8.5: Farm dump soil analytical results

Analyte	Health criteria 0m to <1m	Ecological criteria	Management Limits	Site data			
	HIL / HSL (mg/kg)	EIL/ESL (mg/kg)	ML (mg/kg)	No. samples analysed	Number of exceedances	Max' (mg/kg)	Meets screening criteria?
Heavy metals							
Arsenic	100	100	-	10	0	6	Yes
Cadmium	20	-	-		0	1	Yes
Chromium	100	410	-		0	14	Yes
Copper	6,000	230	-		0	38	Yes
Lead	300	1,100	-		0	16	Yes
Nickel	400	270	-		0	17	Yes
Zinc	7,400	770	-		0	502	Yes
Mercury	40	-	-		0	0.2	Yes
TRH and BTEXN							
Benzene	0.6	10 ⁵	-	10	0	<0.5	Yes
Toluene	390	65 ⁵	-		0	<0.5	Yes
Ethylbenzene	NL	40 ⁵	-		0	<0.5	Yes
Meta - & para - Xylenes	95	1.6 ⁵	-		0	<0.5	Yes
Ortho-xylene			-		0	<0.5	Yes
Naphthalene	4	170	-		0	<0.5	Yes
F1 TRHs C ₆ -C ₁₀	40	180 ⁵	-		0	<10	Yes
F2 TRHs >C ₁₀ - C ₁₆	230	120 ⁵	-		0	<50	Yes
F3 TRHs >C ₁₆ - C ₃₄	NL	1,300 ⁵	-		0	<100	Yes
F4 TRHs >C ₃₄ - C ₄₀	NL	5,600 ⁵	-		0	<100	Yes
PAHs							
Benzo(a)pyrene	NL	0.7	-	10	0	<0.5	Yes
B(a)P TEQ	3	NL	-		0	<0.5	Yes
Total PAHs	300	NL	-		0	<0.5	Yes
Polychlorinated Biphenyls and Organochlorine pesticides							
Heptachlor	6	NL	-	14	0	<0.05	Yes
Total Chlordane (sum)	50	NL	-		0	<0.05	Yes
Endrin	10	NL	-		0	<0.05	Yes

Analyte	Health criteria 0m to <1m	Ecological criteria	Management Limits	Site data			
	HIL / HSL (mg/kg)	EIL/ESL (mg/kg)	ML (mg/kg)	No. samples analysed	Number of exceedances	Max' (mg/kg)	Meets screening criteria?
Endosulfan (sum)	270	NL	-		0	<0.05	Yes
Methoxychlor	300	NL	-		0	<0.2	Yes
Sum of Aldrin + Dieldrin	6	NL	-		0	<0.05	Yes
Sum of DDD + DDE + DDT	240	180	-		0	0.18	Yes
PCBs	1	-	-		0	<0.1	Yes
Asbestos							
Asbestos	Detect	-	-		0	Non- detect	Yes

The findings of the investigation at the farm dump indicated that reported analytical concentrations in soil were below the adopted human health and ecological screening criteria in all samples collected and analysed.

8.6 Groundwater analytical results

The groundwater analytical results are summarised in Table 8.6 below.

Table 8.6: Groundwater analytical summary

Analyte	Fresh Waters ¹	Drinking Water	Health Screening Levels ²	Recreational ³	Site maximum concentration	Sample location
<i>Metals</i>						
Arsenic	24/13	10	-	100	3	-
Cadmium	0.2	2	-	20	<0.1	-
Chromium	4.4	50	-	500	<1	-
Copper	1.4	2,000	-	20,000	<1	-
Lead	3.4	10	-	100	<1	-
Nickel	11	20	-	200	2	-
Zinc	8	-	-	-	15	MW01, MW03, MW04 and MW05
Mercury	0.06	1	-	10	0.5	MW01, MW03, MW04 and MW05
<i>Volatile hydrocarbons</i>						
Benzene	950	1	900	10	<1	-
Toluene	180	800	NL	8,000	<2	-
Ethyl-benzene	80	300	NL	3,000	<2	-
Xylenes	275/350	600	NL	6,000	<2	-

Analyte	Fresh Waters ¹	Drinking Water	Health Screening Levels ²	Recreational ³	Site maximum concentration	Sample location
Naphthalene	16	-	NL	-	<2	-
F1 TRHs C6 – C10	-	-	6,000	-	<20	-
<i>Semi-volatile hydrocarbons</i>						
F2 TRHs >C10 – C16	-	-	NL	-	<100	-
F3 TRHs >C16 – C34	-	-	NL	-	410	-
F4 TRHs >C34 – C40	-	-	NL	-	<100	-
TRHs >C10 – C40	-	-	NL	-	<100	-
<i>OCPs</i>						
Heptachlor	0.01	-	-	-	<0.5	-
Chlordane	0.03	-	-	-	<0.5	-
Endrin	0.01	-	-	-	<0.5	-
Endosulfan	0.03	-	-	-	<0.5	-
Methoxychlor	-	-	-	-	<2	-
Aldrin & Dieldrin	-	0.3	-	-	<0.5	-
4,4'-DDT	0.01	0.01	-	-	<2	-

Table notes:

1. Criteria from NEPM, 2013.
2. HSLs for commercial purposes used.
3. NHMRC Guidelines for Managing Risks in Recreational Water (2008).

Bold – exceeds highlighted criterion.

NL – no limit.

Fresh water and drinking water criteria were exceeded on-site with respect to metals only. Refer to Figure 7 and 8 for the groundwater monitoring well locations. A summary is provided below:

- zinc: Four locations (MW01, MW03, MW04 and MW05) exceeded freshwater criteria with a maximum reported concentration of 15 µg/L; and
- mercury: four locations (MW01, MW03, MW04 and MW05) exceeded the freshwater criteria with a maximum reported concentration of 0.5 µg/L.

No volatile hydrocarbon compounds or organochloride pesticides were detected in excess of the laboratory limits of reporting. TRH F3 fraction was detected in samples collected from two monitoring wells (MW02 and MW03) however concentrations were below health screening levels.

9.0 Discussion and Conceptual Site Model

9.1 Applicability of ecological criteria

Exceedances of ecological criteria were identified in soil, however they are not considered to be significant as the remediation approach adopted for the site does not require the remediation of isolated ecological criteria exceedances. No widespread ecological issues were identified at the site during the broader previous investigations.

The exceedances of ecological criteria are likely to be localised and do not warrant further investigation.

9.2 Farm pit discussion

9.2.1 Soil

Based on the analytical results from the soil sampling, exceedances of the HILs criteria were reported for B(a)P TEQ at sample location SL11 to 0.1 m depth. This sample was collected from soil adjacent to the eastern edge of the concrete slab (refer to Figure 2).

Analysis was conducted at 0.3 m below ground surface (SL11_0.3) which reported concentrations below the laboratory LORs. Sample location SL11 was collected from the outside edge of the investigation area and therefore, further sampling/analysis was required to laterally delineate B(a)P TEQ impact.

Additional samples SL29_0.1, SL31_0.1 and SL33_0.1 were collected ~ 2 m to the north, south and east of sample location SL11. Results from these samples had reported B(a)P TEQ concentrations below the laboratory LORs. It can therefore be concluded that B(a)P TEQ impact is limited in extent to shallow soils (0.1 m depth) and the impact extends laterally over an area of approximately 4 m².

9.2.2 Pit water

Elevated levels of metals have exceeded the marine and drinking water criteria consisting of arsenic, cadmium, chromium, copper, lead, nickel and zinc. In addition, elevated concentrations of TRHs C₁₀ – C₄₀ have been reported within the surface water at the farm pit. No OCPs and/or PCBs were identified in excess of the laboratory limits of reporting. These contaminants are likely associated with the use of fuels, oils, grease and solvents historically used within the area.

9.2.3 Concrete

The concrete from the farm pit exceeded health screening for copper. In addition, elevated F3 TRH was identified in the concrete. No OCPs and/or PCBs were detected in excess of the laboratory limit of reporting.

9.3 Farm shed soil discussion

Sample SL16_0.1 had detections of asbestos fibres in soil which exceeds the site-specific asbestos criteria of "no asbestos detected". Refer to Figure 3 attached for the farm shed soil sample locations. No asbestos was detected in soil at SL16 at 0.5 m depth, suggesting the impact was limited to shallow soils. This is consistent with the previous investigations conducted by OCTIEF and Cavanba:

- OCTIEF (2018), *Preliminary and Detailed Site Investigation – 771 Cudgen Road, Cudgen, NSW 2487* (Ref. J8961); and
- Cavanba Consulting (2019), *Soil investigation report – Farm shed, 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R03).

The nature of asbestos contamination is considered to be ACM in disturbed soil. Whilst it is recognised that asbestos fibres have been detected in laboratory analysed soil samples, the source of fibres is expected to be the ACM, rather than a friable asbestos source such as pipe lagging or loose insulation, and therefore does not pose a friable risk.

The findings of asbestos in soil do not change the proposed remedial action plan developed by Cavanba:

- Cavanba (2019) *Remedial Action Plan Addendum – Farm Shed, 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R04 V2).

9.4 Residential house soil discussion

Lead concentrations exceeding health-based criteria were present underneath the former residential house in sample locations SL21 and SL22 at 0.1 m depth. Refer to Figure 4 for the locations of these exceedances. The concentrations and location of these lead exceedances were consistent with the previous results from the investigation conducted by Cavanba in 2018:

- Cavanba Consulting (2019), *Residential house – soil investigation report, 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R01).

These findings do not change the proposed scope outlined in the remedial action plan developed by Cavanba:

- Cavanba (2019a) *Remedial Action Plan Addendum – Residential House, 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R02 V2).

9.5 Farm dam discussion

9.5.1 Soil and surface water

The findings of the investigation at the farm dam reported analytical concentrations in soil and surface water below the adopted criteria in all samples collected and analysed.

Based on these results, no remediation is required within this area.

9.6 Farm dump discussion

9.6.1 Soil

The findings of the investigation at the farm dam indicated that reported analytical concentrations in soil were below the adopted criteria in all samples collected and analysed. It is therefore concluded that no remediation associated with contamination is required within this area; however, the waste does pose an aesthetic issue and it is understood that will be removed offsite. Records of appropriate lawful disposal should be provided.

9.7 Groundwater discussion

A discussion regarding the groundwater results is provided in the following sections.

9.7.1 Farm dump groundwater

The monitoring well installed at the farm dump was found to be dry following installation.

Based on the following discussion, this is considered to be appropriate and does require further investigation:

- the risk associated with the contamination present is low;
- no PID detections or odours were identified associated with this material;
- no soil impact was identified in excess of laboratory limits of reporting or criteria; and

- no impact was identified in the samples collected from either the dam or the groundwater monitoring well located downgradient.

9.7.2 Heavy metals

Elevated concentrations of metals (zinc and mercury) were identified in groundwater in excess of freshwater criteria. These are considered to be representative of background conditions, as consistent concentrations were present in the samples collected, including MW01 which was hydrologically upgradient of the site features. It should be noted however that this is based on a limited data set consisting of only one round.

9.7.3 Petroleum hydrocarbons

Low level TRH detections in groundwater, below criteria are considered to be low risk based on the following:

- no BTEXN or PAH compounds were detected in groundwater, suggesting that the source is not petroleum;
- no gross TRH contamination was identified during the soil investigations;
- no oil or grease or sheen was present in the dam on-site in excess of laboratory limits of reporting;
- no sheen was present in groundwater and/or on the dam during site inspections and sampling.

It should be noted however that this is based on a limited data set consisting of only one round.

9.8 Conceptual Site Model

A summary of the conceptual site model is provided in Table 9.1 below.

Table 9.1: Conceptual Site Model

Element	Site specific information
The physical and built environment, including former, existing and proposed structures.	<p>The site was formerly used for agricultural purposes and is proposed to be development as the new Tweed Valley Hospital.</p> <p>A residential house, garage and farm shed were located within the eastern portion of the site, prior to demolition in late 2018 and early 2019. The following features are currently present onsite:</p> <ul style="list-style-type: none"> – farm dam; – farm dump; and – farm pit (concrete sump feature).
Known and potential sources of contamination and contaminants of concern, including chemical storage, use and disposal.	<p>Farm pit</p> <ul style="list-style-type: none"> – elevated metals consisting of arsenic, cadmium, chromium, copper, lead, nickel and zinc copper, lead, zinc and TRHs are present within surface water at the farm pit sump feature; – concrete sample CS_02 exceeded copper HILs with a maximum reported concentration of 12,200 mg/kg (>200% criteria), as well as elevated TRH; – one sample exceeded the HILs for B(a)P TEQ with a reported concentration of 7.1 mg/kg (>100% of criteria); and – the volume of B(a)P TEQ contaminated soil is approximately 5 m³. <p>Farm shed</p>

Element	Site specific information
	<ul style="list-style-type: none"> Sample SL16_0.1 had detections of asbestos fibres in soil which exceeds the site-specific asbestos criteria. No asbestos was detected in soil at SL16 at 0.5 m depth, suggesting the impact was limited to shallow soils; and approximately 100 m³ of soil is required for disposal offsite <p>Residential house</p> <ul style="list-style-type: none"> lead concentrations exceeding health-based criteria were present underneath the former residential house; and approximately 132 m³ of soil is required for disposal off-site. <p>Farm dam</p> <ul style="list-style-type: none"> analytical concentrations in soil and surface water were below the adopted criteria in all samples collected and analysed. It is therefore concluded that no remediation is required within this area. <p>Farm dump</p> <ul style="list-style-type: none"> analytical concentrations in soil were below the adopted criteria in all samples collected and analysed. It is therefore concluded that no remediation associated with contamination is required within this area. The waste poses an aesthetic issue and it is understood that it will be removed off-site. Records of appropriate lawful disposal must be provided.
Potentially affected media, such as soil, groundwater, surface water and air, including extent and magnitude, and potential variations, e.g. preferential pathways etc.	<p>Media consists of soil, surface water and groundwater.</p> <p><i>Soil</i> B(a)P TEQ soil impact was identified in the vicinity of the farm pit – approximately 5 m³ in extent.</p> <p>Asbestos fibres have been identified within soil at the farm shed – approximately 100 m³</p> <p>Elevated concentrations of lead were identified within the former footprint of the residential house – approximately 132 m³</p> <p><i>Farm Pit Water</i> Elevated heavy metals and TRHs are present within surface water at the farm pit - <1,000 L in volume.</p> <p><i>Groundwater</i> Groundwater is not considered to be an affected media based on analytical results.</p>
Human and ecological receptors.	<p>The following potential human and ecological receptors exist on and off-site:</p> <ul style="list-style-type: none"> site occupiers; future construction workers;

Element	Site specific information
	<ul style="list-style-type: none"> – farm dam – ecological receptor; – Cudgen creek ~ 800 m to the east (via surface or groundwater) – ecological receptor.
Potential and complete exposure pathway to human and/or environmental receptors.	<p>Due to distance to receptors, and the nature of the site, ecological exposure pathways are limited.</p> <p>The immediate risk to human health at the site in its current state is considered low.</p> <p>Potential exposure is limited to on-site workers during the proposed construction works, who may be exposed to elevated heavy metals and TRHs within surface water (farm pit) and lead, B(a)P TEQ and asbestos contaminated soil.</p> <p>Off-site receptors, including Cudgen creek and associated creeks are unlikely to be exposed, due to the distance from the source area on-site (i.e. more than 500 m) and the dept of groundwater at ~ 12 m.</p>
Data gaps	No investigation of tributyltin was conducted in sediment adjacent to the river or groundwater.

10.0 Conclusion and recommendations

10.1 Conclusion

Remediation and validation works should be conducted at the site as per the RAPs prepared for the farm shed and residential house, as well as the RAP to be prepared for the farm pit. The farm dump and farm dam are considered to be suitable for the proposed site use.

With implementation of the recommendations provided in Section 10.2, the site is likely to be suitable for the proposed use as a hospital.

10.2 Recommendations

The following sections describe the recommendations with respect to areas of the site, and media.

10.2.1 Residential house and farm shed

The findings during this investigation were consistent with the previous investigations, and there are therefore no amendments to the RAPs required.

10.2.2 Farm pit

Following the investigation, contamination was identified associated with the farm dip which requires remediation. Benzo(a)pyrene TEQ was detected in excess of the human health criteria in one location adjacent to the concrete slab associated with the farm pit. A maximum benzo(a)pyrene TEQ of 7.1 mg/kg was detected. Based on this, remediation and/or management is required. In addition, the water within the pit and the concrete associated with need to be disposed of at a facility licensed to receive the waste.

A remedial action plan for benzo(a)pyrene TEQ in soil should be prepared for the farm shed investigation area which should consider:

- off-site disposal; and/or
- on-site management/capping including long term management.

If off-site disposal is proposed, validation samples should be collected following the completion of remediation.

10.2.3 Farm dump

Based on the investigation conducted as part of this report, no exceedances of criteria were identified associated with the farm dump. No remedial action plan is required to be developed for the farm dump.

The waste present poses an aesthetic issue and this should be removed off-site, and disposed of at a facility licensed to receive it. Records of appropriate lawful disposal should be provided in the validation report.

10.2.4 Farm dam

Based on the investigation conducted as part of this report, no exceedances of criteria were identified associated with the farm dam. Based on this, no remedial action plan is required to be developed for the farm dam.

10.2.5 Groundwater

For confirmation purposes, another round of groundwater sampling should be conducted during the proposed validation works to further investigate:

- the exceedances of criteria for zinc and mercury;
- the presence of low-level detections of TRH; and
- to conduct analysis for OCPs with appropriate LORs in comparison to site criteria.

11.0 Glossary and references

11.1 Glossary

AST	Aboveground storage tank
BTEXN	Benzene, toluene, ethyl benzene, xylenes and naphthalene
CSM	Conceptual site model
EIL	Environmental Investigation Level
ESL	Environmental Screening Level
EMP	Environmental Management Plan
ESA	Environmental site assessment
GME	Groundwater monitoring event
HHRA	Human health risk assessment
HIL	Health Investigation Level
HSL	Health Screening Level
LOR	Limit of reporting
Metals	Arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni), and zinc (Zn)
NATA	National Association of Testing Authorities
NEPM/C	National Environmental Protection Measure/Council
OCPs	Organochlorine pesticides
OH&S	Occupational health and safety
OPPs	Organophosphorus pesticides
PAHs	Polycyclic aromatic hydrocarbons, including the USEPA 16 priority pollutants: naphthalene; acenaphthylene; acenaphthene; fluorine; phenanthrene; anthracene; fluoranthene; pyrene; benzo(a) anthracene; chrysene; benzo(b)fluoranthene; benzo(k) fluoranthene; benzo(a)pyrene; indeno(1.2.3.cd)pyrene; dibenz (a.h)anthracene; and benzo(g.h.i)perylene
PCBs	Polychlorinated biphenyls
PID	Photo-ionisation detector
PSH	Phase separated hydrocarbons
QA/QC	Quality assurance/quality control
RAP	Remediation action plan

RPD	Relative Percentage Difference
SWL	Standing water level
TRHs	Total recoverable hydrocarbons, including volatile C6 – C10 fraction and semi- and non-volatile >C10 – C36 fractions
UCL	Upper confidence limit
UST	Underground storage tank
VRP	Voluntary remediation proposal
VOCs	Volatile organic compounds

11.2 References

11.2.1 Previous Reports

Cavvanba Consulting (2018) *Asbestos Clearance Certificate – Farm Dump* (Ref. 18084-CC04).

Cavvanba Consulting (2019) *Residential house – soil investigation report, 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R01).

Cavvanba Consulting (2019) *Residential house – remedial action plan addendum. 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R02).

Cavvanba Consulting (2019) *Farm shed – soil investigation report, 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R03).

Cavvanba Consulting (2019) *Farm Shed – remedial action plan addendum. 771 Cudgen Road, Cudgen, NSW* (Ref.: 18084 R04).

OCTIEF (2018) *Preliminary and Detailed Site Investigation – 771 Cudgen Road, Cudgen, NSW 2487* (Ref. J8961).

11.2.2 References

State of NSW and Office of Environment & Heritage (2018) eSPADE (accessed December 2018).

11.2.3 Guidelines made by EPA

Department of Environment and Conservation NSW (DEC) (March 2007) *Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination*. NSW EPA, Sydney.

Environment Protection Authority (EPA) (September 1995) *Contaminated Sites: Sampling Design Guidelines*. NSW EPA, Sydney.

EPA (reprinted August 2003) *Contaminated Sites: Guidelines for Assessing Banana Plantation Sites*, amended August 2003. NSW EPA, Sydney.

EPA (reprinted June 2003) *Contaminated Sites: Guidelines for the Vertical Mixing of Soil on Former Broad-acre Agricultural Land*. NSW EPA, Sydney.

EPA (June 2005) *Contaminated Sites: Guidelines for Assessing Former Orchards and Market Gardens*. NSW EPA, Sydney.

EPA (October 2017) *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (3rd edition)*. EPA, Sydney.

EPA (September 2015) *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*. NSW EPA, Sydney.

Office of Environment & Heritage (reprinted August 2011) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*. NSW OE&H, Sydney.

11.2.4 Guidelines approved by the EPA

Australian and New Zealand Government (ANZG)

ANZECC/ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Paper No 4, Canberra. *Limited to the water quality for primary industries component only*.

Australian and New Zealand Governments and Australian State and Territory Governments (ANZAST) (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. ANZAST (2018).

EnHealth publications (formerly National Environmental Health Forum monographs)

Lock, W. H., (1996) "Composite Sampling", *National Environmental Health Forum Monographs, Soil Series No. 3*. SA Health Commission, Adelaide.

Department of Health and Ageing and EnHealth Council (2012) *Environmental Health Risk Assessment: Guidelines for Assessing Human Health Risks from Environmental Hazards*. Commonwealth of Australia, Canberra.

National Environment Protection Council publications

NEPC (1999) *National Environment Protection (Assessment of Site Contamination) Measure, Schedule A and Schedules B(1)-B(10)*, amended April 2013. National Environment Protection Council, Adelaide.

Other documents

NHMRC/ NRMMC (2011) *Australian Drinking Water Guidelines*. National Health and Medical Research Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra, and Natural Resource Management Ministerial Council (NRMMC), Australian Government, Canberra.

NSW Agricultural/CMPS&F (1996) *Guidelines for the Assessment and Clean Up of Cattle Tick Dip Sites for Residential Purposes*. NSW Agricultural and CMPS&F Environmental, Canberra.

11.2.5 Other technical documents made by EPA

DEC (July 2005) *Information for the assessment of gasworks sites*. NSW DEC, Sydney;

Department of Environment, Climate Change and Water (DECCW) (August 2009) *Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008*, amended September 2009. NSW DECCW, Sydney.

DECCW (2010) *Vapour Intrusion: Technical Practice Note*. (Ref. 2010/774). NSW DECCW, Sydney.

EPA (October 2016) *Addendum to the Waste Classification Guidelines (2014) – Part 1: classifying waste*.

EPA (April 2014a) *Best Practice Note: Landfarming*. NSW EPA, Sydney.

EPA (November 2016) *Designing Sampling Programs for Sites Potentially Contaminated by PFAS: Guidance Document*. NSW EPA, Sydney.

EPA (November 2012) *Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases*. NSW EPA, Sydney.

EPA (April 2014b) *Technical Note: Investigation of Service Station Sites*. NSW EPA, Sydney.

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

EPA (November 2014) *Waste Classification Guidelines – Part 1: Classifying Waste*. NSW EPA, Sydney, NSW.

11.2.6 Additional technical documents referenced by EPA

Beck, P & Mann, B (2010) *A technical guide for demonstrating monitored natural attenuation of petroleum hydrocarbons in groundwater*, CRC CARE Technical Report no. 15, CRC CARE, South Australia.

Clements, L, Palaia, T & Davis, J (2009) *Characterisation of sites impacted by petroleum hydrocarbons: National guideline document*, CRC CARE Technical Report no. 11. CRC CARE, South Australia.

CRC CARE (2015) Technical Report No. 34. *A practitioner's guide for the analysis, management and remediation of LNAPL*. CRC CARE, South Australia.

Johnston, CD (2010) *Selecting and assessing strategies for remediating LNAPL in soil and aquifers*, CRC CARE Technical Report no. 18, CRC CARE, South Australia.

Figures

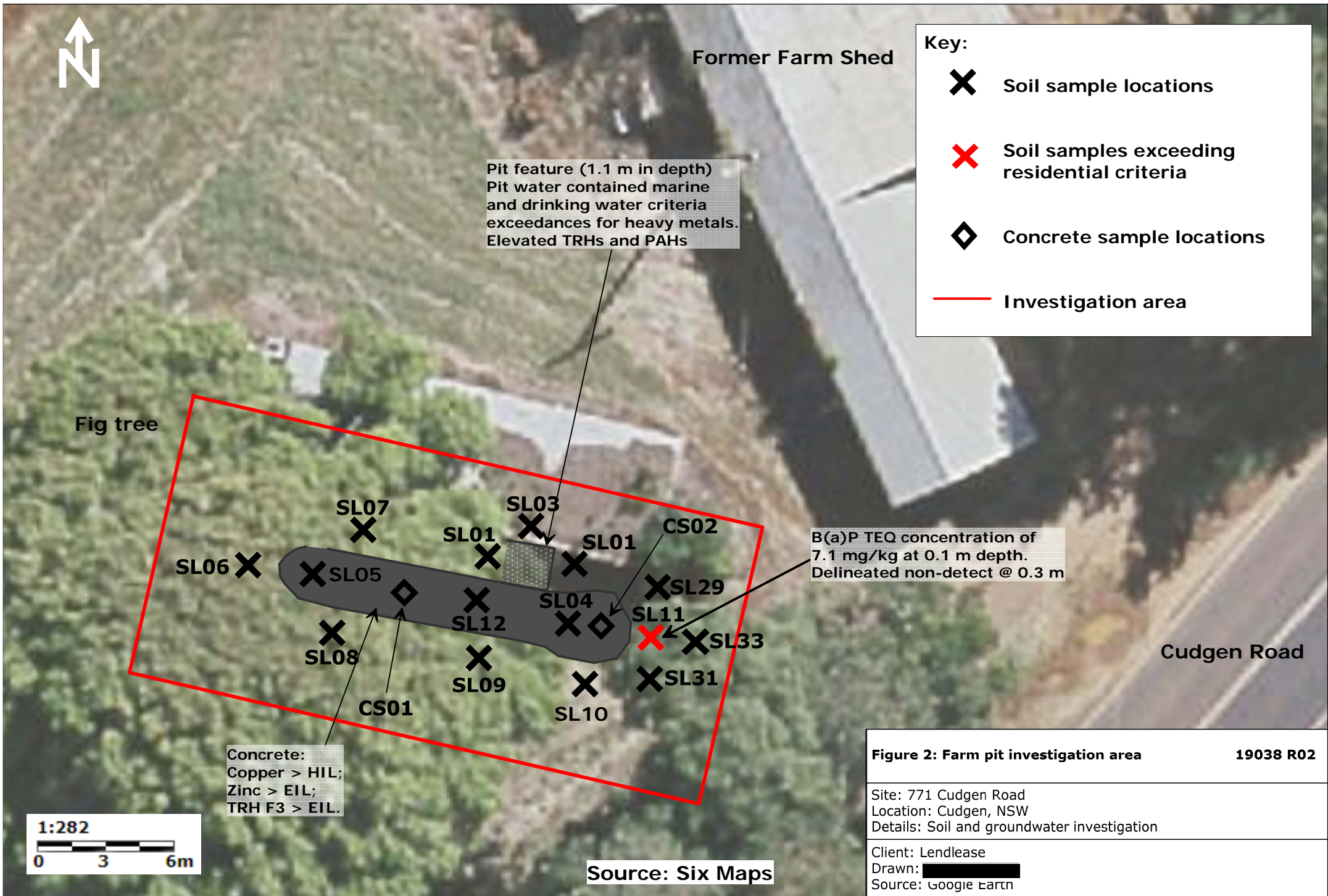


Figure 1: Site Location

19038 R02

Site: 771 Cudgen Road
Location: Cudgen, NSW
Details: Soil and groundwater investigation

Client: Lendlease
Drawn: [REDACTED]
Source: Google Maps

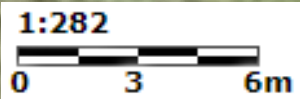




Key:

✕ Sample locations

— Investigation area



Source: Six Maps




Figure 3: Farm shed sample locations **19038 R02**

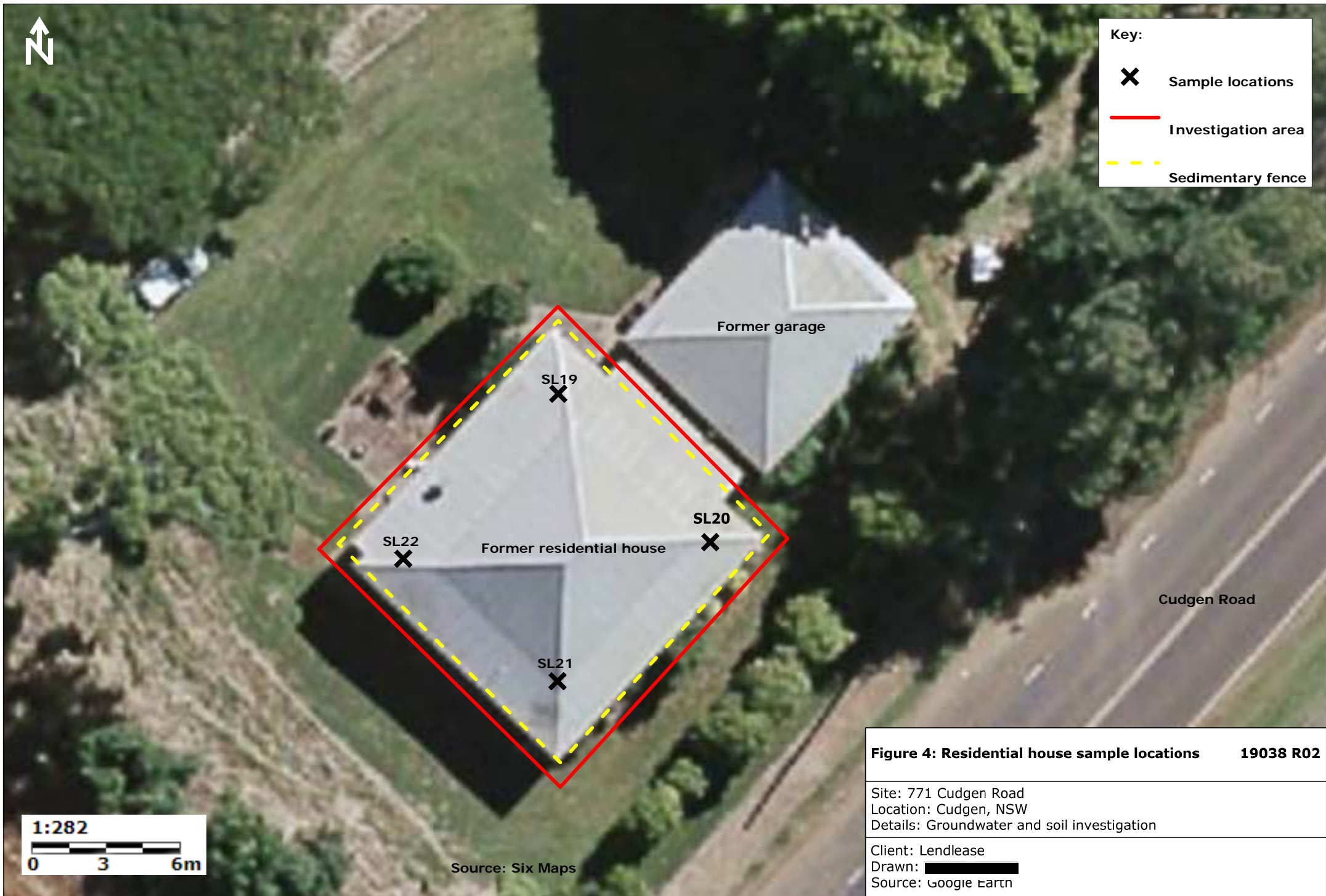
Site: 771 Cudgen Road
Location: Cudgen, NSW
Details: Soil and groundwater investigation

Client: Lendlease
Drawn: XXXXXXXXXX
Source: Google Earth




Key:

-  Sample locations
-  Investigation area
-  Sedimentary fence




1:282

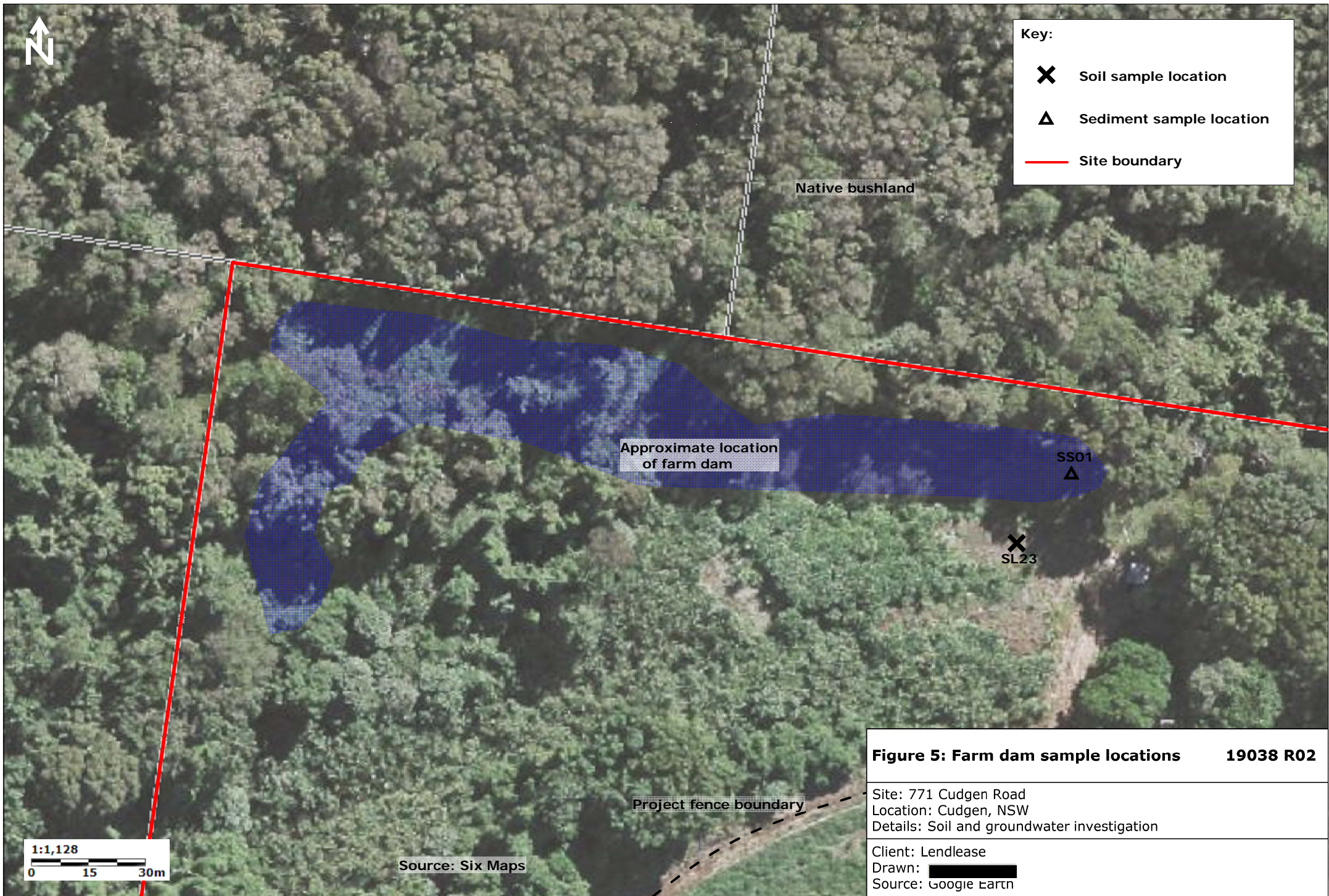


0 3 6m

Figure 4: Residential house sample locations **19038 R02**

Site: 771 Cudgen Road
Location: Cudgen, NSW
Details: Groundwater and soil investigation

Client: Lendlease
Drawn: 
Source: Google Earth





Key:

✕ Sample locations

- - - Approximate extent of farm dump

Native bushland

SL24 ✕

✕ SL25

Project fence boundary

Approximate extent and location of farm dump

SL26 ✕

SL27 ✕

SL28 ✕

1:564
0 5 10m

Source: Six Maps

Figure 6: Farm dump sample locations

19038 R02

Site: 771 Cudgen Road
Location: Cudgen, NSW
Details: Soil and groundwater investigation

Client: Lendlease
Drawn: [REDACTED]
Source: Google Earth



Estimated groundwater flow direction

Key:



Surface water sample location



Monitoring well locations

AHD

Australian Height Datum

MW04
26.242 AHD



Former Farm Shed

MW03
26.651 AHD



Farm pit/concrete sump feature

MW02
25.877 AHD



SW_DIP

MW01
25.952 AHD



Cudgen Road

Fig tree

Source: Six Maps

1:282

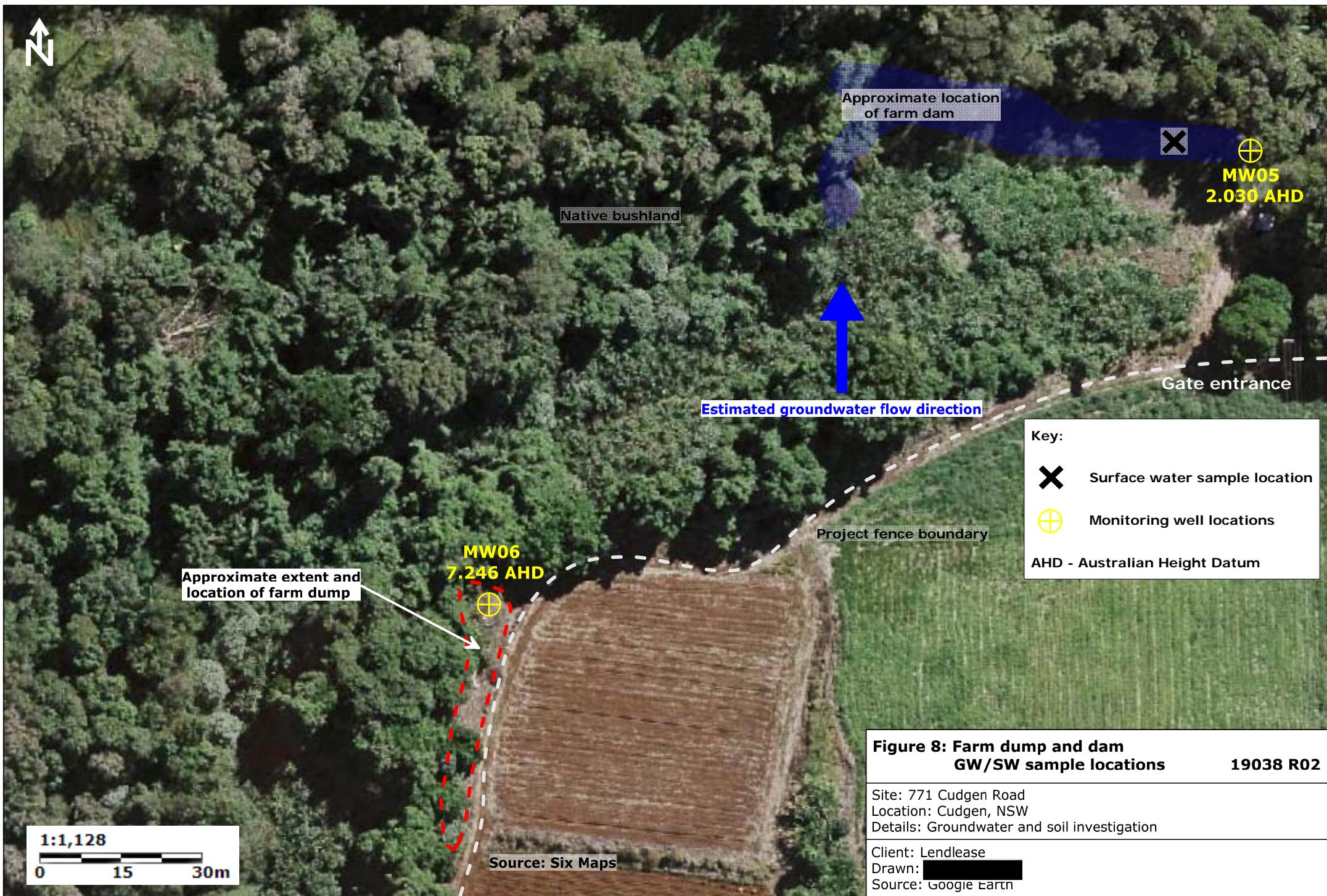
0 3 6m

**Figure 7: Farm pit and shed
GW/SW sample locations**

19038 R02

Site: 771 Cudgen Road
Location: Cudgen, NSW
Details: Groundwater and soil investigation

Client: Lendlease
Drawn: [REDACTED]
Source: Google Earth



**Figure 8: Farm dump and dam
GW/SW sample locations**

19038 R02

Site: 771 Cudgen Road
Location: Cudgen, NSW
Details: Groundwater and soil investigation

Client: Lendlease
Drawn: [REDACTED]
Source: Google Earth

North-west

CONTAMINATION SOURCES

- 1 - Asbestos in soil
- 2 - B(a)P TEQ in soil
- 3 - Lead in soil
- 4 - Heavy metals & TRHs in surface water

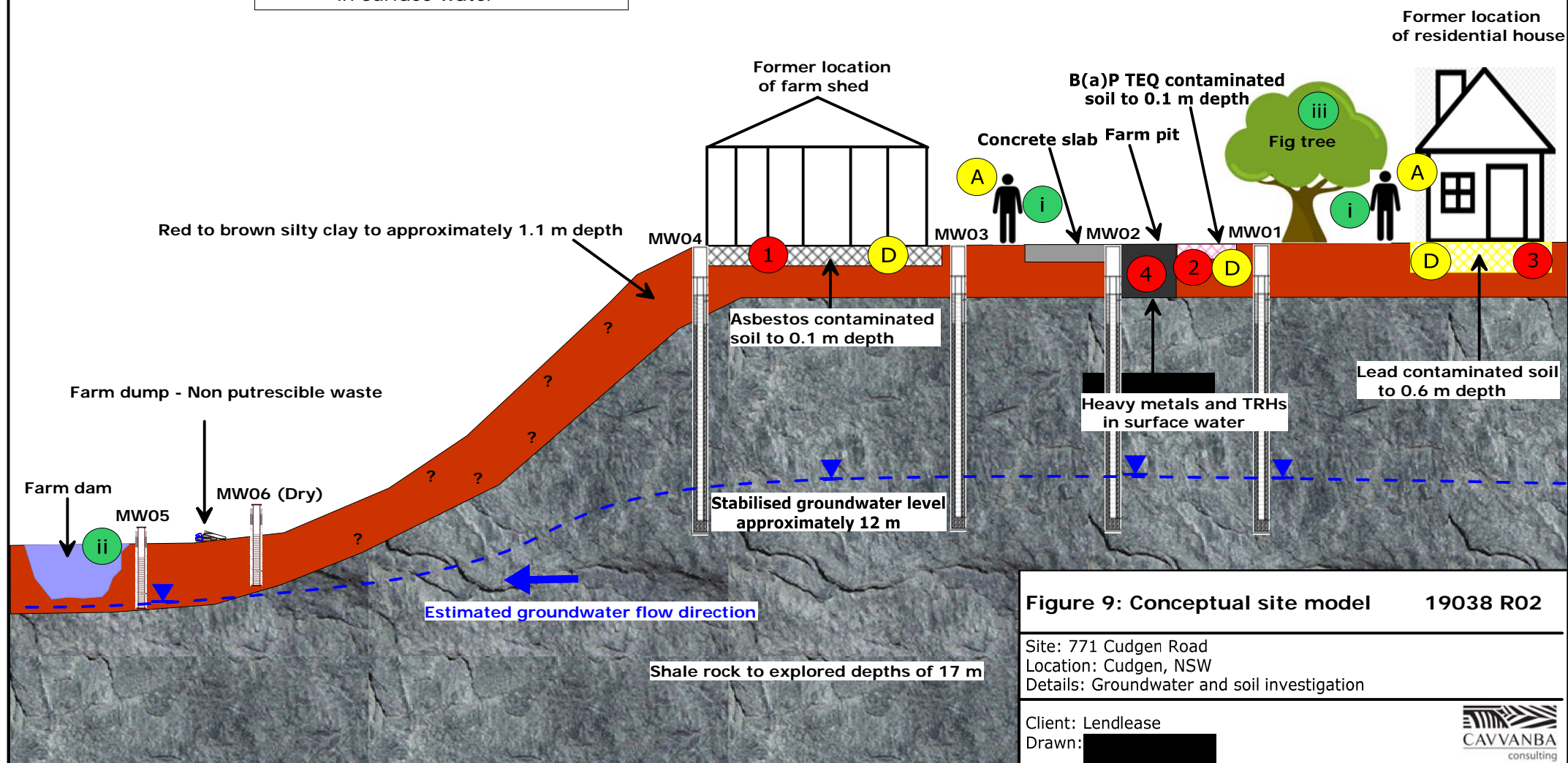
EXPOSURE PATHWAYS

- A - Direct contact (dermal or incidental ingestion)
- D - Excavation/disturbance

RECEPTORS On-site

- i Site users
- ii Surface Water
- iii Ecological

South-east



Tables

Table 1: Soil, Concrete and Sediment Analytical Summary

Sample	Depth (m)	Date sampled	Description	8 Metals	Lead & TCLP lead only	TRHs C6 - C40	BTEXN	PAHs	OPs	OCs	PCBs	Asbestos
<i>Analytical - Soil</i>												
<i>Farm Pit feature</i>												
SL01_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL01_1.1	1.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL02_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL02_1.1	1.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL02_1.2	1.2	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL03_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL03_0.5	0.5	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL04_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL05_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL06_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL07_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL08_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL09_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL10_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL11_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL11_0.3	0.3	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.									
SL12_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL29_0.1	0.1	11/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.					•				
SL29_0.3	0.3	11/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.					•				
SL31_0.1	0.1	11/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.					•				
SL31_0.3	0.3	11/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.					•				
SL33_0.1	0.1	11/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.					•				
SL33_0.3	0.3	11/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.					•				
<i>Farm pit feature concrete</i>												
CS_01	-	01/07/19	Concrete	•		•	•	•	•	•	•	•
CS_02	-	01/07/19	Concrete	•		•	•	•	•	•	•	•
<i>Farm shed</i>												
SL13_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL13_0.5	0.5	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•
SL13_1.0	1.0	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	•		•	•	•	•	•	•	•

Table 1: Soil, Concrete and Sediment Analytical Summary

Sample	Depth (m)	Date sampled	Description	8 Metals	Lead & TCLP lead only	TRHs C6 - C40	BTEXN	PAHs	OPs	OCs	PCBs	Asbestos
<i>Analytical - Soil</i>												
SL14_0.5	0.5	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL14_1.0	1.0	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL15_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL15_0.5	0.5	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL16_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL16_0.5	0.5	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL17_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL17_0.5	0.5	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL18_0.1	0.1	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL18_0.5	0.5	01/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
<i>Residential house</i>												
SL19_0.1	0.1	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.		*							
SL20_0.1	0.1	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.		*							
SL21_0.1	0.1	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.		*							
SL22_0.1	0.1	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.		*							
<i>Farm dam</i>												
SL23_0.1	0.1	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL23_0.5	0.5	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
<i>Farm dam sediment</i>												
SS01	-	02/07/19	Dark brown silty clay. Saturated with low plasticity.	*		*	*	*	*	*	*	*
<i>Farm dump</i>												
SL24_0.1	0.1	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL24_0.5	0.5	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL25_0.1	0.1	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL25_0.5	0.5	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL26_0.1	0.1	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL26_0.5	0.5	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL27_0.1	0.1	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL27_0.5	0.5	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL28_0.1	0.1	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*
SL28_0.5	0.5	02/07/19	Red to brown silty CLAY. Soft, slightly moist and low plasticity.	*		*	*	*	*	*	*	*

Table 2: Soil, Concrete and Sediment Analytical Summary, Metals (mg/kg)

Sample	Depth (m)	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
LORs		5	1	2	5	5	2	5	0.1
Analytical - Soil									
Farm pit feature									
SL01_0.1	0.1	12	4	25	209	51	16	3,700	0.2
SL01_1.1	1.1	7	nd	24	35	8	10	121	0.2
SL02_0.1	0.1	12	11	42	2,220	136	99	3,490	0.1
SL02_1.1	1.1	8	nd	24	52	10	11	138	0.2
SL02_1.2	1.2	nd	nd	20	14	5	10	54	0.2
SL03_0.1	0.1	nd	4	28	2,540	8	12	116	0.1
SL03_0.5	0.5	nd	nd	17	17	nd	9	44	0.1
SL04_0.1	0.1	15	nd	20	120	10	11	347	0.2
SL05_0.1	0.1	8	nd	26	34	10	11	127	0.2
SL06_0.1	0.1	11	nd	20	34	10	12	88	0.2
SL07_0.1	0.1	18	nd	22	28	13	13	186	0.2
SL08_0.1	0.1	14	1	25	83	20	14	899	0.2
SL09_0.1	0.1	15	nd	28	69	16	13	269	0.2
SL10_0.1	0.1	17	nd	25	95	18	13	325	0.2
SL11_0.1	0.1	19	2	46	93	79	25	3,980	0.1
SL12_0.1	0.1	16	nd	24	91	9	12	104	0.2
Farm shed									
SL13_0.1	0.1	10	nd	22	67	30	15	1,050	0.2
SL13_0.5	0.5	7	nd	19	36	13	13	150	0.2
SL13_1.0	1	nd	nd	22	20	8	13	161	0.1
SL14_0.5	0.5	7	nd	23	26	13	13	213	0.2
SL14_1.0	1	6	nd	22	142	16	13	187	0.2
SL15_0.1	0.1	nd	nd	20	20	9	15	402	0.2
SL15_0.5	0.5	nd	nd	16	15	6	12	71	0.1
SL16_0.1	0.1	11	nd	22	82	30	15	256	0.2
SL16_0.5	0.5	nd	nd	20	15	7	12	65	0.2
SL17_0.1	0.1	7	2	31	82	82	15	1,190	0.1
SL17_0.5	0.5	nd	nd	26	27	9	13	91	0.2
SL18_0.1	0.1	8	nd	5	15	6	4	271	nd
SL18_0.5	0.5	nd	nd	22	20	8	12	74	0.2
Residential house									
SL19_0.1	0.1	-	-	-	-	112	-	-	-
SL20_0.1	0.1	-	-	-	-	177	-	-	-
SL21_0.1	0.1	-	-	-	-	347	-	-	-
SL22_0.1	0.1	-	-	-	-	385	-	-	-
Farm Dam									
SL23_0.1	0.1	nd	nd	9	52	11	20	174	0.2
SL23_0.5	0.5	nd	nd	7	28	nd	19	40	0.1

Table 2: Soil, Concrete and Sediment Analytical Summary, Metals (mg/kg)

Sample	Depth (m)	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
LORs		5	1	2	5	5	2	5	0.1
<i>Farm Dump</i>									
SL24_0.1	0.1	nd	nd	9	28	6	15	87	0.1
SL24_0.5	0.5	nd	nd	11	30	6	16	78	0.1
SL25_0.1	0.1	nd	nd	10	34	6	16	80	0.1
SL25_0.5	0.5	nd	nd	11	34	8	16	90	0.2
SL26_0.1	0.1	nd	nd	12	35	16	17	331	0.2
SL26_0.5	0.5	6	nd	14	18	8	12	143	0.2
SL27_0.1	0.1	nd	nd	11	31	6	13	90	0.2
SL27_0.5	0.5	nd	nd	9	29	12	11	88	0.2
SL28_0.1	0.1	5	nd	10	36	11	11	465	0.2
SL28_0.5	0.5	5	1	10	38	10	13	502	0.2
<i>Statistics</i>									
Samples analysed		41	41	41	41	45	41	41	41
Detects		23	7	41	41	43	41	41	40
% detect		56%	17%	100%	100%	96%	100%	100%	98%
Maximum		19	11	46	<u>2,540</u>	385	99	<u>3,980</u>	0.2
Mean		6.0	0.6	19.7	163.3	39.1	15.5	496.0	0.2
Median		10	2	20	34	10	13	150	0.2
Minimum		<5	<1	5	14	5	4	40	0.1
<i>Farm pit feature concrete</i>									
CS_01	-	nd	nd	19	7	7	6	<u>1,360</u>	nd
CS_02	-	6	nd	74	<u>12,200</u>	128	21	<u>1,590</u>	nd
<i>Farm Dam sediment</i>									
SS_01	-	nd	nd	8	63	10	12	129	0.1
<i>Criteria</i>									
HILs - Residential A		100	20	100	6,000	300	400	7,400	40
EILs - Urban residential and public open space (aged)		100	-	410	<u>230</u>	1,100	270	<u>770</u>	-

See table notes at end of section

Table 3: Soil, Concrete and Sediment Analytical Summary, BTEXN and TRHs (mg/kg)

Sample	Depth (m)	Benzene	Toluene	Ethyl benzene	meta- & para-Xylenes	ortho-Xylene	Naphthalene	F1 TRHs C6 - C10	F2 TRHs >C10 - C16	F3 TRHs >C16 - C34	F4 TRHs >C34 - C40
LORs		0.2	0.5	0.5	0.5	0.5	0.5	10	50	100	100
<i>Analytical - Soil</i>											
<i>Farm pit feature</i>											
SL01_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	120	520	180
SL01_1.1	1.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL02_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	2,170	110
SL02_1.1	1.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL02_1.2	1.2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL03_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL03_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL04_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL05_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL06_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL07_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL08_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	140	nd
SL09_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL10_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL11_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	260	nd
SL12_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Farm shed</i>											
SL13_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL13_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL13_1.0	1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL14_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL14_1.0	1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL15_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL15_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL16_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL16_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL17_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	160	nd
SL17_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL18_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL18_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Farm Dam</i>											
SL23_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL23_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Farm dump</i>											
SL24_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL24_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL25_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL25_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL26_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL26_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL27_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL27_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL28_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL28_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Statistics</i>											
Samples analysed		41	41	41	41	41	41	41	41	41	41
Detects		0	0	0	0	0	0	0	1	5	2
% detect		0%	0%	0%	0%	0%	0%	0%	2%	12%	5%
Maximum		<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<10	120	2,170	180
Mean		<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<10	2.93	79.3	7.1
Median		<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<10	120	260	145
Minimum		<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<10	120	140	110
<i>Farm pit feature concrete</i>											
CS_01	-	nd	nd	1.2	2.2	1.6	nd	nd	100	7,830	nd
CS_02	-	nd	nd	nd	nd	nd	nd	nd	nd	9,440	150
<i>Farm Dam sediment</i>											
SS_01	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Criteria Low - high density residential (HSLs), urban residential and public open space (ESLs)</i>											
Health screening levels 0m to <1m (silt)		0.6	390	no limit	95	4	40	230	no limit	no limit	no limit
Health screening levels 1m to <2m (silt)		0.7	no limit	no limit	210	no limit	65	no limit	no limit	no limit	no limit
Health screening levels 2m to <4m (silt)		1	no limit	no limit	no limit	no limit	100	no limit	no limit	no limit	no limit
Health screening levels 4m+		2	no limit	no limit	no limit	no limit	190	no limit	no limit	no limit	no limit
Health investigation levels		-	-	-	-	-	-	-	-	-	-
Ecological screening levels (fine texture)		10	65	40	1.6	-	180	120	1,300	5,600	-
Ecological investigation levels		-	-	-	-	-	170	-	-	-	-

See table notes at end of section

Table 4: Soil, Concrete and Sediment Analytical Summary, PAHs (mg/kg)

Sample	Depth (m)	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b+g)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Total PAHs	B(a)P TEQ (zero LOR)
LORs		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	-	-
Analytical Soil																		
Farm pit feature																		
SL01_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL01_1.1	1.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL02_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL02_1.1	1.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL02_1.2	1.2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL03_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL03_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL04_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL05_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL06_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL07_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL08_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL09_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL10_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL11_0.1	0.1	nd	nd	nd	6.4	0.8	17.7	15	5.6	5.5	5.8	2.5	4.7	2.9	0.6	3.8	71.3	7.1
SL11_0.3	0.3	nd	nd	nd	nd	nd	1.0	0.8	nd	nd	nd	nd	nd	nd	nd	nd	1.8	nd
SL12_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL29_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL29_0.3	0.3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL31_0.1	0.1	nd	nd	nd	0.5	nd	1	0.8	nd	nd	nd	nd	nd	nd	nd	nd	2.3	nd
SL31_0.3	0.3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL33_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL33_0.3	0.3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Farm shed																		
SL13_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL13_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL13_1.0	1.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL14_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL14_1.0	1.0	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL15_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL15_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL16_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL16_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL17_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL17_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL18_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL18_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Table 4: Soil, Concrete and Sediment Analytical Summary, PAHs (mg/kg)

Sample	Depth (m)	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Total PAHs	B(a)p TEQ (zero LOR)
LORs		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	-	-
<i>Analytical Soil</i>																		
<i>Farm dam</i>																		
SL23_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL23_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Farm dump</i>																		
SL24_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL24_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL25_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL25_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL26_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL26_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL27_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL27_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL28_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SL28_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Statistics</i>																		
Samples analysed		48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Detects		0	0	0	2	1	3	3	1	1	1	1	1	1	1	1	3	1
% detect		0%	0%	0%	4%	2%	6%	6%	2%	2%	2%	2%	2%	2%	2%	2%	6%	2%
Maximum		<0.5	<0.5	<0.5	6.4	<0.5	17.7	15.0	5.6	5.5	5.8	2.5	4.7	2.9	<0.5	3.8	71.3	7.1
Mean		<0.5	<0.5	<0.5	0.1	<0.5	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	<0.5	0.1	1.6	0.1
Median		<0.5	<0.5	<0.5	3.5	<0.5	1.0	0.8	5.6	5.5	5.8	2.5	4.7	2.9	<0.5	3.8	2.3	7.1
Minimum		<0.5	<0.5	<0.5	<0.5	<0.5	1.0	0.8	5.6	5.5	5.8	2.5	4.7	2.9	<0.5	3.8	1.8	7.1
<i>Farm pit feature concrete</i>																		
CS_01	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CS_02	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Farm dam sediment</i>																		
SS_01	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Criteria</i>																		
HILs - Residential A		NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	300	3
ESLs - Urban residential and public open space		NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	0.7	NL	NL	NL	NL	NL

See table notes at end of section

Table 5: Soil, Concrete and Sediment Analytical Summary - OCPs & PCBs (mg/kg)

Sample	Depth (m)	Heptachlor	Total Chlordane (sum)	Endrin	Endosulfan (sum)	Methoxychlor	Sum of Aldrin + Dieldrin	Sum of DDD + DDE + DDT	Polychlorinated Biphenyls
LOR		0.05	0.05	0.05	0.05	0.2	0.05	0.05	0.1
<i>Analytical - Soil</i>									
<i>Farm pit feature</i>									
SL01_0.1	0.1	nd	nd	nd	nd	nd	nd	0.14	nd
SL01_1.1	1.1	nd	nd	nd	nd	nd	nd	0.2	nd
SL02_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL02_1.1	1.1	nd	nd	nd	nd	nd	nd	0.24	nd
SL02_1.2	1.2	nd	nd	nd	nd	nd	nd	nd	nd
SL03_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL03_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd
SL04_0.1	0.1	nd	nd	nd	nd	nd	nd	1.63	nd
SL05_0.1	0.1	nd	nd	nd	nd	nd	nd	0.12	nd
SL06_0.1	0.1	nd	nd	nd	nd	nd	nd	0.1	nd
SL07_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL08_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL09_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL10_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL11_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL12_0.1	0.1	nd	nd	nd	nd	nd	nd	0.12	nd
<i>Farm shed</i>									
SL13_0.1	0.1	nd	nd	nd	nd	nd	nd	0.52	nd
SL13_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd
SL13_1.0	1	nd	nd	nd	nd	nd	nd	nd	nd
SL14_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd
SL14_1.0	1	nd	nd	nd	nd	nd	nd	nd	nd
SL15_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL15_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd
SL16_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL16_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd
SL17_0.1	0.1	nd	nd	nd	nd	nd	0.17	nd	nd
SL17_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd
SL18_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL18_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd
<i>Farm dam</i>									
SL23_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL23_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd
<i>Farm dump</i>									
SL24_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL24_0.5	0.5	nd	nd	nd	nd	nd	nd	0.05	nd
SL25_0.1	0.1	nd	nd	nd	nd	nd	nd	0.18	nd
SL25_0.5	0.5	nd	nd	nd	nd	nd	nd	0.06	nd
SL26_0.1	0.1	nd	nd	nd	nd	nd	nd	0.07	nd
SL26_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd

Table 5: Soil, Concrete and Sediment Analytical Summary - OCPs & PCBs (mg/kg)

Sample	Depth (m)	Heptachlor	Total Chlordane (sum)	Endrin	Endosulfan (sum)	Methoxychlor	Sum of Aldrin + Dieldrin	Sum of DDD + DDE + DDT	Polychlorinated Biphenyls
LOR		0.05	0.05	0.05	0.05	0.2	0.05	0.05	0.1
<i>Analytical - Soil</i>									
SL27_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL27_0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd
SL28_0.1	0.1	nd	nd	nd	nd	nd	nd	nd	nd
SL28_0.5	0.5	nd	nd	nd	nd	nd	nd	0.1	nd
<i>Statistics</i>									
Samples analysed		41	41	41	41	41	41	41	41
Detects		0	0	0	0	0	1	13	0
% detect		0%	0%	0%	0%	0%	2%	32%	0%
Maximum		<0.05	<0.05	<0.05	<0.05	<0.05	0.2	1.63	<0.1
Mean		<0.05	<0.05	<0.05	<0.05	<0.05	0.004	0.086	<0.1
Median		<0.05	<0.05	<0.05	<0.05	<0.05	0.170	0.120	<0.1
Minimum		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
<i>Farm pit feature concrete</i>									
CS_01	-	nd	nd	nd	nd	nd	nd	nd	nd
CS_02	-	nd	nd	nd	nd	nd	nd	nd	nd
<i>Farm dam sediment</i>									
SS_01	-	nd	nd	nd	nd	nd	nd	nd	nd
<i>Criteria</i>									
HILs - Residential A		6	50	10	270	300	6	240	1
ESLs - Urban residential and public open space		NL	NL	NL	NL	NL	NL	180 (DDT only)	-

See table notes at end of section

Table 6: Soil Analytical Summary, Asbestos

Sample	Depth (m)	Date	Asbestos
<i>LORs</i>			-
<i>Analytical - Soil</i>			
<i>Farm pit feature</i>			
SL01_0.1	0.1	01/07/19	No
SL01_1.1	1.1	01/07/19	No
SL02_0.1	0.1	01/07/19	No
SL02_1.1	1.1	01/07/19	No
SL02_1.2	1.2	01/07/19	No
SL03_0.1	0.1	01/07/19	No
SL03_0.5	0.5	01/07/19	No
SL04_0.1	0.1	01/07/19	No
SL05_0.1	0.1	01/07/19	No
SL06_0.1	0.1	01/07/19	No
SL07_0.1	0.1	01/07/19	No
SL08_0.1	0.1	01/07/19	No
SL09_0.1	0.1	01/07/19	No
SL10_0.1	0.1	01/07/19	No
SL11_0.1	0.1	01/07/19	No
SL12_0.1	0.1	01/07/19	No
<i>Farm shed</i>			
SL13_0.1	0.1	01/07/19	No
SL13_0.5	0.5	01/07/19	No
SL13_1.0	1	01/07/19	No
SL14_0.5	0.5	01/07/19	No
SL14_1.0	1	01/07/19	No
SL15_0.1	0.1	01/07/19	No
SL15_0.5	0.5	01/07/19	No
SL16_0.1	0.1	01/07/19	Yes
SL16_0.5	0.5	01/07/19	No
SL17_0.1	0.1	01/07/19	No
SL17_0.5	0.5	01/07/19	No

Table 6: Soil Analytical Summary, Asbestos

Sample	Depth (m)	Date	Asbestos
<i>LORs</i>			-
<i>Analytical - Soil</i>			
SL18_0.1	0.1	01/07/19	No
SL18_0.5	0.5	01/07/19	No
<i>Farm dam</i>			
SL23_0.1	0.1	2/07/2019	No
SL23_0.5	0.5	2/07/2019	No
<i>Farm dump</i>			
SL24_0.1	0.1	2/07/2019	No
SL24_0.5	0.5	2/07/2019	No
SL25_0.1	0.1	2/07/2019	No
SL25_0.5	0.5	2/07/2019	No
SL26_0.1	0.1	2/07/2019	No
SL26_0.5	0.5	2/07/2019	No
SL27_0.1	0.1	2/07/2019	No
SL27_0.5	0.5	2/07/2019	No
SL28_0.1	0.1	2/07/2019	No
SL28_0.5	0.5	2/07/2019	No
<i>Criteria</i>			
HILs A - Residential			No/ Yes

See table notes at end of section

Table 7: Soil Analytical Summary, Quality Control (mg/kg)

Analyte	LOR mg/kg	SL15_0.1	QS01	RPD	QS02	RPD	SL16_0.1	QS03	RPD	QS04	RPD
Type	-	Primary	Duplicate	%	Inter-laboratory Duplicate	%	Primary	Duplicate	%	Inter-laboratory Duplicate	%
Date	-	01/07/19	01/07/19	-	01/07/19	-	01/07/19	01/07/19	-	01/07/19	-
Media	Soil	Soil	Soil	-	Soil	-	Soil	Soil	-	Soil	-
<i>Heavy metals</i>											
Arsenic	5	nd	nd	-	nd	-	11	13	17	7	34
Cadmium	1	nd	nd	-	nd	-	nd	nd	-	nd	-
Chromium	2	20	17	16	17	17	22	20	10	14	49
Copper	5	20	21	5	16	26	82	64	25	54	50
Lead	5	9	9	0	11	28	30	28	7	10	107
Nickel	5	15	10	40	9	32	15	10	40	6	51
Zinc	2	402	455	12	560	44	256	419	48	150	49
Mercury	0.1	0.2	0.1	67	0.4	1	0.2	0.2	0	0.4	100
<i>Organics</i>											
Benzene	0.2	nd	nd	-	nd	-	nd	nd	-	nd	-
Toluene	0.5	nd	nd	-	nd	-	nd	nd	-	nd	-
Ethyl benzene	0.5	nd	nd	-	nd	-	nd	nd	-	nd	-
meta- & para-Xylene	0.5	nd	nd	-	nd	-	nd	nd	-	nd	-
ortho-Xylene	0.5	nd	nd	-	nd	-	nd	nd	-	nd	-
TRHs C6 – C10	10	nd	nd	-	nd	-	nd	nd	-	nd	-
TRHs >C10 - C16	50	nd	nd	-	nd	-	nd	nd	-	nd	-
TRHs >C16 - C34	100	nd	nd	-	nd	-	nd	nd	-	nd	-
TRHs >C34 - C40	100	nd	nd	-	nd	-	nd	nd	-	nd	-
Total PAHs	-	nd	nd	-	nd	-	nd	nd	-	nd	-
<i>Ocs and PCBs</i>											
Heptachlor	0.05	nd	nd	-	nd	-	nd	nd	-	nd	
Total Chlordane (sum)	0.05	nd	nd	-	nd	-	nd	nd	-	nd	
Endrin	0.05	nd	nd	-	nd	-	nd	nd	-	nd	
Endosulfan (sum)	0.05	nd	nd	-	nd	-	nd	nd	-	nd	
Methoxychlor	0.2	nd	nd	-	nd	-	nd	nd	-	nd	
Sum of Aldrin + Dieldrin	0.05	nd	nd	-	nd	-	nd	nd	-	nd	
Sum of DDD + DDE + DDT	0.05	nd	nd	-	nd	-	nd	nd	-	nd	
Polychlorinated Biphenyls	0.1	nd	nd	-	nd	-	nd	nd	-	nd	
Data Quality Indicator		-	-	<50%	-	<50%	-	-	<50%	-	<50%

See tables notes at end of section

Table 7: Soil Analytical Summary, Quality Control (mg/kg)

Analyte	LOR mg/kg	SL27_0.5	QS05	RPD	QS06	RPD	Trip Blank	Trip Spike	TSC	RPD
Type	-	Primary	Duplicate	%	Inter-laboratory Duplicate	%	-	-	-	%
Date	-	02/07/19	02/07/19	-	02/07/19	-	01/07/19	01/07/19	01/07/19	-
Media	Soil	Soil	Soil	-	Soil	-	-	-	-	-
Heavy metals										
Arsenic	5	nd	nd	-	nd	-	-	-	-	-
Cadmium	1	nd	nd	-	nd	-	-	-	-	-
Chromium	2	9	10	11	9	0	-	-	-	-
Copper	5	29	32	10	25	17	-	-	-	-
Lead	5	12	6	67	6	26	-	-	-	-
Nickel	5	11	12	9	9	20	-	-	-	-
Zinc	2	88	81	8	52	63	-	-	-	-
Mercury	0.1	0.2	0.2	0	0.4	100	-	-	-	-
Organics										
Benzene	0.2	nd	nd	-	nd	-	nd	0.3	0.3	100
Toluene	0.5	nd	nd	-	nd	-	nd	13.1	14.9	88
Ethyl benzene	0.5	nd	nd	-	nd	-	nd	1.7	2.1	81
meta- & para-Xylene	0.5	nd	nd	-	nd	-	nd	8.8	10.6	83
ortho-Xylene	0.5	nd	nd	-	nd	-	nd	3.6	4.2	86
TRHs C6 – C10	10	nd	nd	-	nd	-	nd	62	72	86
TRHs >C10 - C16	50	nd	nd	-	nd	-	-	-	-	-
TRHs >C16 - C34	100	nd	nd	-	nd	-	-	-	-	-
TRHs >C34 - C40	100	nd	nd	-	nd	-	-	-	-	-
Total PAHs	-	nd	nd	-	nd	-	-	-	-	-
Ocs and PCBs										
Heptachlor	0.05	nd	nd	-	nd	-	-	-	-	-
Total Chlordane (sum)	0.05	nd	nd	-	nd	-	-	-	-	-
Endrin	0.05	nd	nd	-	nd	-	-	-	-	-
Endosulfan (sum)	0.05	nd	nd	-	nd	-	-	-	-	-
Methoxychlor	0.2	nd	nd	-	nd	-	-	-	-	-
Sum of Aldrin + Dieldrin	0.05	nd	nd	-	nd	-	-	-	-	-
Sum of DDD + DDE + DDT	0.05	nd	nd	-	nd	-	-	-	-	-
Polychlorinated Biphenyls	0.1	nd	nd	-	nd	-	-	-	-	-
Data Quality Indicator		-	-	<50%	-	<50%	-	-	-	70-130%

See tables notes at end of section

Table 7: Soil Analytical Summary, Quality Control (mg/kg)

Analyte	LOR mg/kg	SL29_0.1	QS05	RPD	QS06	RPD
Type	-	Primary	Duplicate	%	Inter-laboratory Duplicate	%
Date	-	11/07/19	11/07/19	-	11/07/19	-
Media	Soil	Soil	Soil	-	Soil	-
Organics						
Total PAHs	-	nd	nd	-	nd	-
Data Quality Indicator		-	-	<50%	-	<50%

See tables notes at end of section

Soil Analytical Summary Table Notes

LOR denotes limit of reporting (standard LOR unless otherwise shown)

PBILs denotes phytotoxicity based investigation levels

nd denotes not detected above the LOR

NL denotes non-limiting

- denotes not analysed/not available

Bold - Exceeds landuse criteria

^ denotes raised LOR

TRH C6-C10 F1 = TRH C6-C10 minus BTEX compounds

*analyte list shown on laboratory report

1. Methyl mercury / inorganic mercury
2. Netherlands protection of terrestrial organisms/ Netherlands human health based and human health and ecologically based protection level.
3. Criteria for phenol

Table 8: Groundwater and surface water Analytical Summary, BTEXN, TRHs (ug/L)

Sample location	Date sampled	Depth to water (m)	Benzene	Toluene	Ethyl benzene	Total Xylenes	Naphthalene	F1 C6 - C10 TRHs	F2 >C10 - C16 TRHs	F3 >C16 - C34 TRHs	F4 >C34 - C40 TRHs	>C10 - C40 TRHs
LORs		-	1	2	2	2	2	20	100	100	100	100
Analytical - Groundwater												
MW01	16/07/19	11.565	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW02	16/07/19	11.900	nd	nd	nd	nd	nd	nd	nd	410	nd	nd
MW03	16/07/19	12.120	nd	nd	nd	nd	nd	nd	nd	240	nd	nd
MW04	16/07/19	12.240	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW05	16/07/19	1.660	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW06	16/07/19	-	Well Dry									
Farm pit surface water and farm dam												
SW-DIP	01/07/19	-	nd	nd	nd	nd	45.5*	140	6,620	28,200	nd	34,800
SW_DAM	02/07/19	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Statistics												
Samples analysed			3	3	3	3	3	3	3	3	3	3
Detects			0	0	0	0	0	0	0	0	0	0
% detect			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Maximum			0	0	0	0	0	0	0	0	0	0
Mean			-	-	-	-	-	-	-	-	-	-
Median			-	-	-	-	-	-	-	-	-	-
Minimum			-	-	-	-	-	-	-	-	-	-
Criteria												
Health levels (HSLs A and B) 2 m to < 4 m (silt)			4,000	NL	NL	NL	NL	6,000	NL	NL	NL	NL
Health levels (HSLs A and B) 4 m to < 8 m (silt)			5,000	NL	NL	NL	NL	6,000	NL	NL	NL	NL
Health levels (HSLs A and B) 8 m + (silt)			5,000	NL	NL	NL	NL	6,000	NL	NL	NL	NL
Freshwater ¹			950	180	80	275/350	16	-	-	-	-	-
Drinking water ²			1	800 (25)	300 (3)	600 (20)	-	-	-	-	-	-
Recreational Criteria			10	8,000	3,000	6,000	-	-	-	-	-	-

* For conservative purposes, concentrations of field duplicate QW02 have been reported due to higher concentrations.

See tables notes at end of section

Table 9: Groundwater and surfacewater Analytical Summary, PAHs (ug/L)

Sample	Date sampled	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Total PAHs	B(a)p TEQ (zero)
LORs		1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	0.5	0.5
<i>Analytical</i>																			
MW01	16/07/19	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW02	16/07/19	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW03	16/07/19	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW04	16/07/19	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW05	16/07/19	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW06	16/07/19	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Farm pit surface water and farm dam</i>																			
SW-DIP	01/07/19	45.5*	nd	1,190	2.6	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1,200	nd
SW_DAM	02/07/19	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
<i>Statistics</i>																			
Samples analysed		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Detects		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% detect		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Maximum		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Criteria</i>																			
Fresh water GILs		16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Drinking Water		-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-
Recreational Criteria		-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-

* For conservative purposes, concentrations of field duplicate QW02 have been reported due to higher concentrations.

See table notes at end of section

Table 10: Groundwater and surface water Analytical Summary, Metals (ug/L)

Sample	Date sampled	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
LORs		1	0.1	1	1	1	1	5	0.04
Analytical									
Groundwater									
MW01	16/07/19	2	nd	nd	nd	nd	2	8	0.45
MW02	16/07/19	2	nd	nd	nd	nd	nd	5	0.05
MW03	16/07/19	nd	nd	nd	nd	nd	nd	10	0.20
MW04	16/07/19	nd	nd	nd	nd	nd	1	15	0.24
MW05	16/07/19	3	nd	nd	nd	nd	nd	8	0.12
MW06	16/07/19	Well Dry							
Farm pit surface water and farm dam									
SW-DIP	01/07/19	4	3.3	5	1,230	22	7	4,820	nd
SW_DAM	02/07/19	nd	nd	nd	nd	nd	5	18	nd
Criteria									
GILs - Drinking Water		10	2	50*	2,000	10	20	-	1
GILs - Fresh water		24/13	0.2	4.4	1.4	3.4	11	8	0.06
Recreational Criteria		100	20	500	20,000	100	200	-	10

* - Chromium criteria as Cr(VI)

** - Arsenic criteria as As (III) / As (V)

*** - Canadian interim value

See table notes at end of section

Table 11: Groundwater and surfacewater Analytical Summary - OCs and PCBs (mg/kg)

Sample	Date sampled	OCPs							PCBs
		Heptachlor	Total Chlordane (sum)	Endrin	Endosulfan (sum)	Methoxychlor	Sum of Aldrin + Dieldrin	4,4` -DDT	PCBs
LOR		0.5	0.5	0.5	0.5	2	0.5	2	1
Analytical - Soil									
Farm pit feature									
MW01	16/07/19	nd	nd	nd	nd	nd	nd	nd	nd
MW02	16/07/19	nd	nd	nd	nd	nd	nd	nd	nd
MW03	16/07/19	nd	nd	nd	nd	nd	nd	nd	nd
MW04	16/07/19	nd	nd	nd	nd	nd	nd	nd	nd
MW05	16/07/19	nd	nd	nd	nd	nd	nd	nd	nd
MW06	16/07/19	Well Dry							
Farm pit surface water and farm dam									
SW-DIP	01/07/19	nd	nd	nd	nd	nd	nd	nd	nd
SW_DAM	02/07/19	nd	nd	nd	nd	nd	nd	nd	nd
Statistics									
Samples analysed		7	7	7	7	7	7	7	7
Detects		0	0	0	0	0	0	0	0
% detect		0%	0%	0%	0%	0%	0%	0%	0%
Maximum		<0.5	<0.5	<0.5	<0.5	<2	<0.5	<2	<2
Mean		<0.5	<0.5	<0.5	<0.5	<2	<0.5	<2	<2
Median		<0.5	<0.5	<0.5	<0.5	<2	<0.5	<2	<2
Minimum		<0.5	<0.5	<0.5	<0.5	<2	<0.5	<2	<2
Criteria									
GILs - Fresh Waters		0.01	0.03	0.01	0.03	-	-	0.01	0.01
GILs - Drinking waters		-	-	-	-	-	0.3	0.01	0.01

See table notes at end of section

Table 12: Groundwater and Surfacewater Analytical Summary, Quality Control (ug/L)

Analyte	LOR ug/L	SW-DIP	QW01	RPD	SW-DIP	QW02	RPD	MW01	QW03	RPD	MW01	QW04	RPD	Trip Blank	Trip Spike	Trip Spike	Trip Spike	Trip Blank	Trip Spike	Trip Spike	Trip Spike
Type	-	Primary	Duplicate	%	Primary	Inter-laboratory Duplicate	%	Primary	Duplicate	%	Primary	Inter-laboratory Duplicate	%	Lab prep	Field	Lab	Recovery	Lab prep	Field	Lab	Recovery
Date	-	01/07/19	01/07/19	-	01/07/19	01/07/19	-	16/07/19	16/07/19	-	16/07/19	16/07/19	-	01/07/19	01/07/19	01/07/19	-	15/07/19	15/07/19	15/07/19	-
Metals																					
Arsenic	1	4	3	29	4	3	29	2	2	0	2	2	0	-	-	-	-	-	-	-	-
Cadmium	0.1	3.3	2.1	44	3.3	1.3	87	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Chromium	1	5	2	86	5	2	86	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Copper	1	1,230	1,010	20	1,230	1,000	21	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Lead	1	22	16	32	22	12	59	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Nickel	1	7	6	15	7	6	15	2	2	0	2	2	0	-	-	-	-	-	-	-	-
Zinc	5	4,820	4,000	19	4,820	3,400	35	8	7	13	8	10	22	-	-	-	-	-	-	-	-
Mercury	0.1	nd	nd	-	nd	nd	-	nd	nd	-	nd	0.52	-	-	-	-	-	-	-	-	-
TRHs																					
C6 - C10 Fraction	20	140	140	0	140	170	19	nd	nd	-	nd	nd	-	nd	-	-	-	nd	-	-	-
C6 - C10 Fraction minus BTEX (F1)	20	140	140	0	140	170	19	nd	nd	-	nd	nd	-	nd	-	-	-	nd	-	-	-
> C10 - C16 Fraction (F2)	50	6,620	6,110	8	6,620	6,900	4	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
> C16 - C34 Fraction	100	28,200	7,200	119	28,200	11,000	88	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
< C34 - C40 Fraction	50	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
BTEXN																					
Benzene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	nd	17	20	85	nd	16	20	80
Toluene	2	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	nd	18	20	90	nd	16	20	80
Ethylbenzene	2	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	nd	16	20	80	nd	16	20	80
Total Xylenes	2	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	nd	30	40	75	nd	32	40	80
Naphthalene	5	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	nd	15	20	75	nd	16	20	80
PAHs																					
Naphthalene	1	6.7	45.5	149	6.7	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Acenaphthylene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Acenaphthene	1	1,190	nd	-	1,190	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Fluorene	1	2.6	nd	-	2.6	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Phenanthrene	1	nd	14.3	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Anthracene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Fluoranthene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Pyrene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Benz(a)anthracene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Chrysene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	0.5	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Indeno(1.2.3.cd)pyrene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Total PAHs	0.5	1,200	59.8	181	1,200	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
B(a)P TEQ (zero)	0.5	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Ocs and PCBs																					
Heptachlor	0.5	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Total Chlordane (sum)	0.5	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Endrin	0.5	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Endosulfan (sum)	0.5	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Methoxychlor	2	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Sum of Aldrin + Dieldrin	0.5	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
4,4' -DDT	2	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
PCBs	1	nd	nd	-	nd	nd	-	nd	nd	-	nd	nd	-	-	-	-	-	-	-	-	-
Data Quality Indicator	-	-	-	<50%	-	-	<50%	-	-	<50%	-	-	<50%	-	-	-	70-130%	-	-	-	70-130%

See tables notes at end of section

Groundwater and surfacewater Analytical Summary Table Notes

LOR denotes limit of reporting (standard LOR unless otherwise shown)

nd denotes not detected above the LOR

Bold - Exceeds criteria

^ denotes LOR raised

- denotes not analysed/not available

* TPHs in waters used as screening analysis. If > LOR, check specific toxicants e.g. BTEX, PAHs, etc. For recreational waters/aesthetics, oil/petrol not to be noticeable as a visible film on the water or detectable by odour.

1. Aquatic ecosystem criteria from Australian New Zealand Environment and Conservation Council (ANZECC) / Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, including Table 3.4.1 and Section 8.3.7.

DECCW/DERM specify that the 95% species protection levels are to be applied for slightly to moderately-disturbed ecosystems (most urban catchments) and the 99% species protection levels for pristine or vulnerable ecosystems or where the contaminants are intractable (e.g. bioaccumulative).

2. Drinking water criteria from National Health and Medical Research Council (NHMRC) & Natural Resource Management Ministerial Council (NRMMC) (2011) *Australian Drinking Water Guidelines*.

The guideline values are health related and are described as the concentration that does not result in any significant risk to the health of the consumer over a lifetime of consumption. Numbers in brackets are aesthetic values, e.g. appearance, taste and/or odour. The guideline values relate to the quality of water at the point of use, e.g. kitchen or bathroom tap.

While exposure is predominately through ingestion, skin adsorption and/or inhalation are considered in calculating the guideline value (Page 6-7, NHMRC/NRMMC 2004). However, this only addresses consumption/use of drinking water, it does not address inhalation from subsurface, and drinking water criteria should not be used as risk assessment screening values for onsite contaminant concentrations.

Appendix A

OCTIEF (2018) Preliminary and detailed site investigation – 771 Cudgen Road, Cudgen, NSW 2487 – Figure 3 DSI Sampling locations



LEGEND

HA37
Hand Auger location -
Composite
Sample



Hospital Development
Footprint
carpark/buildings

HA37
Hand Auger location -
Discrete
Sample



Site Boundary



1		04/4/2016	MO	RJ
REV	DESCRIPTION	DATE	BY	APP



CLIENT:	Health Infrastructure NSW	DESIGNED:	DRAMA
PROJECT TITLE:	Tweed Hospital PSI/DGI	DRAWN:	No. SHEETS
SITE ADDRESS:	771 Cudgen Road, Cudgen	SCALE:	DATE STARTED:
ORIGINATOR TITLE:	DGI Sampling Locations	JOB No:	J8961
		ORIGINATOR No:	3

Appendix B

Photographic log



Photograph 1.

View over farm pit investigation area. Exploratory investigation with excavator. All photographs taken in July 2019.



Photograph 2.

Example of concrete material adjacent to pit. Sample CS01 was taken from the concrete slab, located beside the concrete sump/pit feature.



Photograph 3.

Reddish-brown silty clay present underneath the concrete slab of the farm pit. No observations of staining were noted.



Photograph 4.

Test pit advanced to 1.2 m at sample location SL02 – located next to the pit feature. Shale rock observed at 1.1 m depth.



Photograph 5.

Test pit advanced to 0.5 m at sample location SL05 – located underneath large fig tree and next to the former location of the concrete slab of the farm pit.



Photograph 6.

Example of test pit advanced in the farm shed investigation area. Geofabric material present underneath ~ 200mm of gravel fill.



Photograph 7.

Shale rock observed at approximately 0.6 m depth at the farm shed investigation area.



Photograph 8.

View east at the residential house investigation area. Sample location SL19 in foreground beneath the former residential house. ~ 200 mm of gravel fill followed by geofabric and reddish-brown silty clay.



Photograph 9.

View south-west over the farm dam. Vegetation present on the surface of the water. Native bushland visible in background.



Photograph 10.

View of sample location SL23. Farm dam visible in background followed by native bushland.



Photograph 11.
Surface water sampling of the farm dam.



Photograph 12.
Non-putrescible waste consisting of corrugated iron, cement sheeting and treated timber located at the farm dump in the north-western corner of the site.



Photograph 13.

Sample location SL16 taken from the farm dump investigation area and next to old hosing material.



Photograph 14.

Example of non-putrescible waste at the farm dump investigation area. Waste included plastic hosing, bricks, steel star pickets and corrugated iron.



Photograph 15.
Drill rig setup at monitoring well location MW03.



Photograph 16.
Drill rig during air hammer works through shale rock at location MW03.



Photograph 17.

Delineation investigation undertaken at the farm pit. Sample location SL29 was located approximately 2 m to the north of SL11.



Photograph 18.

Monitoring well MW05 installed to 1.5 m depth, located to the north of the farm dam.



Photograph 19.

Monitoring well located MW06 installed at the farm dump. Monitoring well was dry at the time of installation and during groundwater sampling.



Photograph 20.

Location of monitoring well MW02 in close proximity to the farm pit feature visible in foreground followed by site compound.

Appendix C

Groundwater parameter probe calibration records



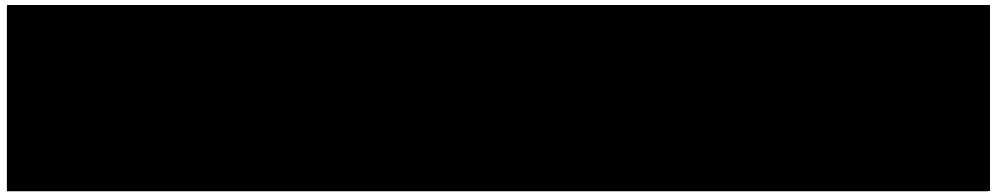
Equipment Calibration Report

Horiba Water Quality Meter U-5000G – Serial No. UOF5YK53

pH	<input checked="" type="checkbox"/> pH 4.01	Actual: <u>3.99</u>
Conductivity	<input checked="" type="checkbox"/> 4.49 mS/cm	Actual: <u>4.52</u>
Turbidity	<input checked="" type="checkbox"/> 0 NTU	Actual: <u>0.0</u>
Dissolved oxygen	<input checked="" type="checkbox"/> 8.92 mg/L	Actual: <u>8.88</u>

Temperature, (i.e. Room temperature): 18.58

Calibrated by:



Date tested: 16/8/19

Job Reference: 19038

Notes:

Photoionisation Detector Calibration Record

Job Ref. 19038

Location Cudgen, NSW

Personnel....

Serial Number	Date	Time	Span gas conc' (e.g 100 ppm isobutylene)	Span gas reading	Fresh air Cal reading	Initials
SN-592-905868	01/07/19	6:30am	100	101.8	0.0	
" "	11/07/19	10:30am	100	100.6	0.0	
" "	25/07/19	8:00am	100	100.9	0.0	

Appendix D

Monitoring well installation and soil boring logs

Monitoring Well Log

Project Name: **TVH Lendlease Cudgen**
 Location / Site: **771 Cudgen Road, Cudgen NSW**
 Client: **Lendlease**
 Contractor: **Rockwell Drilling Services**
 Method: **SFA, Air Hammer**

Hole ID: **MW01**
 Project Number: **19038**
 Hole Depth: **17.00 m**



Date Started: **10/07/2019** Ground Level: -----
 Date Completed: **10/07/2019** Easting: -----
 Sheet: **1 of 1** Northing: -----

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Observations / Comments	Well Details	Well Construction
SFA		0.60			CL		Grass surface				
		2					Silty CLAY - red to brown, soft, medium plasticity.	moist	No observable contamination.		
		4					SHALE - light grey.	dry	No observable contamination.		
		6									
		8									
		10									
		12									
		14									
		16									
		17.00									
		18					End of Hole at 17.00 m Target depth.				

Additional Comments

Developed by bailer 11/07/2019.



Encountered & Stabilised Groundwater Level



Encountered Groundwater Level



Stabilised Groundwater Level



Log Drawn By: [REDACTED]

Contact: [REDACTED]

Logged By: [REDACTED]

Checked By: [REDACTED]

Date: **10/07/2019**

Date:

Monitoring Well Log

Project Name: **TVH Lendlease Cudgen**
 Location / Site: **771 Cudgen Road, Cudgen NSW**
 Client: **Lendlease**
 Contractor: **Rockwell Drilling Services**
 Method: **SFA, Air Hammer**

Hole ID: **MW02**
 Project Number: **19038**
 Hole Depth: **16.00 m**



Date Started: **11/07/2019** Ground Level: -----
 Date Completed: **11/07/2019** Easting: -----
 Sheet: **1 of 1** Northing: -----

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Observations / Comments	Well Details	Well Construction
SFA		1.00			CL		Grass surface				
		2					Silty CLAY - red to brown, soft, medium plasticity.	moist	No observable contamination.		Gate
		4					SHALE - light grey.	dry	No observable contamination.		Backfill with cuttings
		6									
		8									
		10									
		12									
		14									
		16.00									
		18					End of Hole at 16.00 m Target depth.				

Additional Comments

Developed by bailer 11/07/2019.

Encountered & Stabilised Groundwater Level

Encountered Groundwater Level

Stabilised Groundwater Level













Log Drawn By:
 Contact:

Logged By:
 Checked By:

Date: **11/07/2019**
 Date:




Monitoring Well Log






Project Name:	TVH Lendlease Cudgen		Hole ID:	MW03
Location / Site:	771 Cudgen Road, Cudgen NSW		Project Number:	19038
Client:	Lendlease		Hole Depth:	15.00 m
Contractor:	Rockwell Drilling Services			
Method:	SFA, Air Hammer			
Date Started:	09/07/2019	Ground Level:	-----	
Date Completed:	09/07/2019	Easting:	-----	
Sheet:	1 of 1	Northing:	-----	

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Observations / Comments	Well Details	Well Construction
SFA		0.60			CL		Grass surface				
		2					Silty CLAY - red to brown, soft, medium plasticity.	moist	No observable contamination.		
		4					SHALE - light grey.	dry	No observable contamination.		
		6									
		8									
		10									
		12									
		14									
		15.00									
		16					End of Hole at 15.00 m Target depth.				
		18									

Additional Comments

Developed by bailer 11/07/2019.

 Encountered & Stabilised Groundwater Level
  Encountered Groundwater Level
  Stabilised Groundwater Level

	Log Drawn By: 	Logged By: 	Date: 09/07/2019
	Contact: 	Checked By: 	Date:

Monitoring Well Log

Project Name: **TVH Lendlease Cudgen**
 Location / Site: **771 Cudgen Road, Cudgen NSW**
 Client: **Lendlease**
 Contractor: **Rockwell Drilling Services**
 Method: **SFA, Air Hammer**

Hole ID: **MW04**
 Project Number: **19038**
 Hole Depth: **15.00 m**



Date Started: **10/07/2019** Ground Level: -----
 Date Completed: **10/07/2019** Easting: -----
 Sheet: **1 of 1** Northing: -----

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Observations / Comments	Well Details	Well Construction
SFA		1.00			CL		Grass surface				
		2					Silty CLAY - red to brown, soft, medium plasticity.	moist	No observable contamination.		Gate
		4					SHALE - light grey.	dry	No observable contamination.		Backfill with cuttings
		6									
		8									
		10									
		12									
		14									
		15.00									
		16					End of Hole at 15.00 m Target depth.				
		18									

Additional Comments

Developed by bailer 11/07/2019.

Encountered & Stabilised Groundwater Level

Encountered Groundwater Level

Stabilised Groundwater Level



Log Drawn By:
 Contact:

Logged By:
 Checked By:

Date: **10/07/2019**
 Date:

Monitoring Well Log

Project Name: **TVH Lendlease Cudgen**
 Location / Site: **771 Cudgen Road, Cudgen NSW**
 Client: **Lendlease**
 Contractor: **Cavvanba**
 Method: **Hand Auger**

Hole ID: **MW05**
 Project Number: **19038**
 Hole Depth: **1.50 m**



Date Started: **11/07/2019** Ground Level: -----
 Date Completed: **11/07/2019** Easting: -----
 Sheet: **1 of 1** Northing: -----

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Observations / Comments	Well Details	Well Construction
Hand Auger		0.2					Grass surface				
		0.4					Silty CLAY - red to brown, soft, medium plasticity.	moist	No observable contamination.	0.10	Cutt.
		0.6								0.30	Bent.
		0.8						wet		0.50	Gravel Pack
		1.0									Screen
		1.2									
		1.4									
		1.50					End of Hole at 1.50 m Target depth.				
		1.6									
		1.8									
		2.0									
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Additional Comments

Developed by bailer 11/07/2019.

Encountered & Stabilised Groundwater Level

Encountered Groundwater Level

Stabilised Groundwater Level



Log Drawn By:
 Contact:

Logged By:
 Checked By:

Date: **11/07/2019**
 Date:

Monitoring Well Log

Project Name: **TVH Lendlease Cudgen**
 Location / Site: **771 Cudgen Road, Cudgen NSW**
 Client: **Lendlease**
 Contractor: **Cavvanba**
 Method: **Hand Auger**

Hole ID. **MW06**
 Project Number: **19038**
 Hole Depth: **1.50 m**



Date Started: **11/07/2019** Ground Level: -----
 Date Completed: **11/07/2019** Easting: -----
 Sheet: **1 of 1** Northing: -----

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Observations / Comments	Well Details	Well Construction
Hand Auger		0.2					Grass surface				
		0.4					Silty CLAY - red to brown, soft, medium plasticity.	moist	No observable contamination.	0.10	Cutt.
		0.6								0.30	Bent.
		0.8								0.50	Gravel Pack
		1.0									Screen
		1.2									
		1.4									
		1.50					End of Hole at 1.50 m Target depth.				
		1.6									
		1.8									
		2.0									
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Additional Comments

Dry at time of install.

Encountered & Stabilised Groundwater Level

Encountered Groundwater Level

Stabilised Groundwater Level




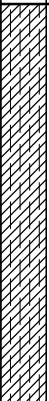
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 Contact: [Redacted]

Logged By: [Redacted]
 Checked By: [Redacted]




Date: **11/07/2019**
 Date:

Test Pit Log

Project Name:	TVH Lendlease Cudgen		Hole ID.	SL01	
Location / Site:	771 Cudgen Road, Cudgen NSW		Project Number:	19038	
Client:	Lendlease		Hole Depth:	1.10 m	
Contractor:	Synergy Resource Management				
Method:	Excavation	Rig Type:			12t excavator
Date Started:	01/07/2019	Ground Level:			-----
Date Completed:	01/07/2019	Easting:	-----		
Sheet:	1 of 1	Northing:	-----		


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Excavation		0.2			CL	Natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL01_0.1	No observable contamination.
		0.4							SL01_0.5	
		0.6								
		0.8								
		1.0								
		1.10								
		1.2					End of Hole at 1.10 m Target depth.		SL01_1.1	
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								

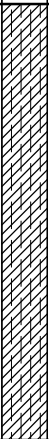
Additional Comments

 Encountered & Stabilised Groundwater Level
  Encountered Groundwater Level
  Stabilised Groundwater Level

	Log Drawn By: XXXXXXXXXX	Logged By: XXXXXXXXXX	Date: 01/07/2019
	Contact: XXXXXXXXXX	Checked By: XXXXXXXXXX	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL02
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 1.20 m
Contractor: Synergy Resource Management		
Method: Excavation Rig Type: 12t excavator		
Date Started: 01/07/2019	Ground Level: -----	
Date Completed: 01/07/2019	Easting: -----	
Sheet: 1 of 1		Northing: -----

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples ID No.	Observations / Comments
							Grass surface			
Excavation		0.2 0.4 0.6 0.8 1.0 1.20			CL	Natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL02_0.1 SL02_0.5 SL02_1.1 SL02_1.2	No observable contamination.
		1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 1.20 m Shale rock, dark brown / grey.			

Additional Comments



Encountered & Stabilised Groundwater Level



Encountered Groundwater Level



Stabilised Groundwater Level



Log Drawn By: [Redacted]

Contact: [Redacted]


Logged By: [Redacted]


Checked By: [Redacted]

Date: **01/07/2019**




Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL03	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.50 m	
Contractor: Synergy Resource Management				<div></div>	
Method: Excavation		Rig Type: 12t excavator			
Date Started: 01/07/2019		Ground Level: -----			
Date Completed: 01/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Excavation		0.2			CL	Natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL03_0.1	No observable contamination.
		0.4							SL03_0.5	
		0.50					End of Hole at 0.50 m Target depth.			
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 01/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL04	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.50 m	
Contractor: Synergy Resource Management				<div></div>	
Method: Excavation		Rig Type: 12t excavator			
Date Started: 01/07/2019		Ground Level: -----			
Date Completed: 01/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Excavation		0.2			CL	Natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL04_0.1	No observable contamination.
		0.4							SL04_0.5	
		0.50					End of Hole at 0.50 m Target depth.			
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level

	Log Drawn By: 	Logged By: 	Date: 01/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name:	TVH Lendlease Cudgen	SL05
		19038
		0.50 m
Contractor:		
Method:	Excavation	
Date Started:	01/07/2019	
Date Completed:	01/07/2019	
Sheet:		

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Soil surface			
Excavation		0.2			CL	Natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL05_0.1	No observable contamination.
		0.4								
		0.50								
		0.6					End of Hole at 0.50 m Target depth.		SL05_0.5	
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								

Additional Comments



Encountered & Stabilised Groundwater Level



Encountered Groundwater Level



Stabilised Groundwater Level



Log Drawn By:


Logged By:

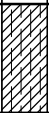
Date: 01/07/2019

Checked By:




Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL06
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 0.30 m
Contractor: Cavvanba		
Method: Hand Auger		
Date Started: 01/07/2019 Ground Level: -----		
Date Completed: 01/07/2019 Easting: -----		CAVVANBA consulting
Sheet: 1 of 1 Northing: -----		


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2 0.30			CL	Clay	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL06_0.1 SL06_0.3	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.			

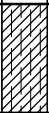
Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 01/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name:	TVH Lendlease Cudgen	Hole ID.	SL07
Location / Site:	771 Cudgen Road, Cudgen NSW	Project Number:	19038
Client:	Lendlease	Hole Depth:	0.30 m
Contractor:	Cavvanba		
Method:	Hand Auger		
Date Started:	01/07/2019		
Date Completed:	01/07/2019	Easting:	-----
Sheet:	1 of 1	Northing:	-----


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2 0.30			CL	Clay	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL07_0.1 SL07_0.3	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.			

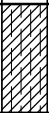
Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: Laurie White	Logged By: Glen Chisnall	Date: 01/07/2019
	Contact: laurie.white@reumad.com.au	Checked By:	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL08
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 0.30 m
Contractor: Cavvanba		
Method: Hand Auger		
Date Started: 01/07/2019 Ground Level: -----		
Date Completed: 01/07/2019 Easting: -----		CAVVANBA consulting
Sheet: 1 of 1 Northing: -----		


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2 0.30			CL	Clay	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL08_0.1 SL08_0.3	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.			

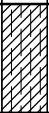
Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 01/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL09
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 0.30 m
Contractor: Cavvanba		
Method: Hand Auger		
Date Started: 01/07/2019 Ground Level: -----		
Date Completed: 01/07/2019 Easting: -----		CAVVANBA consulting
Sheet: 1 of 1 Northing: -----		


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2 0.30			CL	Clay	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL09_0.1 SL09_0.3	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.			

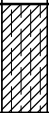
Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 01/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen	SL10
19038	
0.30 m	
Contractor: 	
Method: Hand Auger	
Date Started: 01/07/2019	
Date Completed: 01/07/2019	
Sheet: 	

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2			CL	natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL10_0.1	No observable contamination.
		0.30					End of Hole at 0.30 m Target depth.		SL10_0.3	
		0.4								
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments


 Encountered & Stabilised Groundwater Level
  Encountered Groundwater Level
  Stabilised Groundwater Level

	Log Drawn By: 	Logged By: Checked By: 	Date: 01/07/2019 Date:
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CC LOG 19038 TVH CUDGEN GPJ CC GDT 7/18/19 11:12:30 AM - drawn by laurie white at www.reumad.com.au

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL11	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.30 m	
Contractor: Cavvanba				<div> CAVVANBA consulting</div>	
Method: Hand Auger					
Date Started: 01/07/2019		Ground Level: -----			
Date Completed: 01/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2 0.30			CL	Clay	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL11_0.1 SL11_0.3	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.			

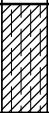
Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 01/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL12
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 0.30 m
Contractor: Cavvanba		
Method: Hand Auger		
Date Started: 01/07/2019 Ground Level: -----		
Date Completed: 01/07/2019 Easting: -----		CAVVANBA consulting
Sheet: 1 of 1 Northing: -----		


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Soil surface			
Hand Auger		0.2 0.30			CL	Clay	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL12_0.1 SL12_0.3	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.			

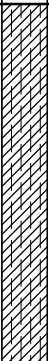
Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 01/07/2019
	Contact:  u	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL13
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 1.00 m
Contractor: Synergy Resource Management		
Method: Excavation Rig Type: 12t excavator		
Date Started: 01/07/2019 Ground Level: -----		
Date Completed: 01/07/2019 Easting: -----		
Sheet: 1 of 1 Northing: -----		

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Gravel surface			
Excavation		0.2			CL	Natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL13_0.1	No observable contamination.
		0.4							SL13_0.5	
		0.6								
		0.8								
		1.00					End of Hole at 1.00 m Target depth.		SL13_1.0	
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments

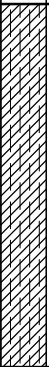
 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level

	Log Drawn By: 	Logged By: 	Date: 01/07/2019
	Contact: 	Checked By: 	Date:




CC LOG 19038 TVH CUDGEN GPJ CC.GDT 7/18/19 11:12:32 AM - drawn by laurie white at www.reumad.com.au

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL14	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 1.00 m	
Contractor: Synergy Resource Management				<div></div>	
Method: Excavation		Rig Type: 12t excavator			
Date Started: 01/07/2019		Ground Level: -----			
Date Completed: 01/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Gravel surface			
Excavation		0.2			CL	Natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL14_0.1	No observable contamination.
		0.4							SL14_0.5	
		0.6							SL14_1.0	
		0.8								
		1.00					End of Hole at 1.00 m Target depth.			
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level

	Log Drawn By: 	Logged By: 	Date: 01/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name:	TVH Lendlease Cudgen	SL15
		19038
		0.50 m
Contractor:		
Method:	Excavation	
Date Started:	01/07/2019	
Date Completed:	01/07/2019	
Sheet:		

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Gravel surface			
Excavation		0.2			CL	Natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL15_0.1	No observable contamination.
		0.4								
		0.50								
		0.6					End of Hole at 0.50 m Target depth.		SL15_0.5	
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								

Additional Comments



Encountered & Stabilised Groundwater Level



Encountered Groundwater Level



Stabilised Groundwater Level



Log Drawn By:


Logged By:


Date: 01/07/2019

Checked By:




Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL16
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 0.50 m
Contractor: Synergy Resource Management		
Method: Excavation Rig Type: 12t excavator		
Date Started: 01/07/2019 Ground Level: -----		
Date Completed: 01/07/2019 Easting: -----		
Sheet: 1 of 1 Northing: -----		

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Gravel surface			
Excavation		0.2			CL	Natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL16_0.1	No observable contamination.
		0.4							SL16_0.5	
		0.50					End of Hole at 0.50 m Target depth.			
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments


 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level

	Log Drawn By: 	Logged By: 	Date: 01/07/2019
	Contact: 	Checked By: 	Date:




CC LOG 19038 TVH CUDGEN GPJ CC.GDT 7/18/19 11:12:35 AM - drawn by laurie white at www.reumad.com.au

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL17	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.50 m	
Contractor: Synergy Resource Management				<div></div>	
Method: Excavation		Rig Type: 12t excavator			
Date Started: 01/07/2019		Ground Level: -----			
Date Completed: 01/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Gravel surface			
Excavation		0.2			CL	Natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL17_0.1	No observable contamination.
		0.4							SL17_0.5	
		0.50					End of Hole at 0.50 m Target depth.			
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: <div></div>	Logged By: <div></div>	Date: 01/07/2019
	Contact: <div></div>	Checked By: <div></div>	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL18	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.50 m	
Contractor: Synergy Resource Management				<div></div>	
Method: Excavation		Rig Type: 12t excavator			
Date Started: 01/07/2019		Ground Level: -----			
Date Completed: 01/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Gravel surface			
Excavation		0.2			CL	Natural	Silty CLAY - red to brown, soft, medium plasticity.	moist	SL18_0.1	No observable contamination.
		0.4							SL18_0.5	
		0.50					End of Hole at 0.50 m Target depth.			
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level


	Log Drawn By: 	Logged By: 	Date: 01/07/2019
	Contact: 	Checked By: 	Date:


Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL19
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 0.10 m
Contractor: Synergy Resource Management		
Method: Excavation Rig Type: 12t excavator		
Date Started: 02/07/2019 Ground Level: -----		
Date Completed: 02/07/2019 Easting: -----		
Sheet: 1 of 1 Northing: -----		

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Gravel surface			
EX		0.10			CL	Nat.	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL19_0.1	No observable contamination.
		0.2					End of Hole at 0.10 m Target depth.			
		0.4								
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								

Additional Comments



 Encountered & Stabilised Groundwater Level

 Encountered Groundwater Level

 Stabilised Groundwater Level





Log Drawn By: 
Contact: 

Logged By: 
Checked By: 




Date: **02/07/2019**
Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL20
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 0.10 m
Contractor: Synergy Resource Management		
Method: Excavation Rig Type: 12t excavator		
Date Started: 02/07/2019 Ground Level: -----		
Date Completed: 02/07/2019 Easting: -----		
Sheet: 1 of 1 Northing: -----		

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Gravel surface			
EX		0.10			CL	Nat.	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL20_0.1	No observable contamination.
		0.2					End of Hole at 0.10 m Target depth.			
		0.4								
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								

Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level

	Log Drawn By: 	Logged By: 	Date: 02/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen

Contractor:

Method: Excavation

Date Started: 02/07/2019


Date Completed: 02/07/2019

Sheet:

SL21


19038

0.10 m





CAVVANBA


consulting

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Gravel surface			
EX		0.10			CL	Nat.	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL21_0.1	No observable contamination.
		0.2					End of Hole at 0.10 m Target depth.			
		0.4								
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								

Additional Comments

 Encountered & Stabilised Groundwater Level

 Encountered Groundwater Level

 Stabilised Groundwater Level



Log Drawn By:


Logged By:


Checked By:

Date: 02/07/2019




Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL22
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 0.10 m
Contractor: Synergy Resource Management		
Method: Excavation Rig Type: 12t excavator		
Date Started: 02/07/2019 Ground Level: -----		
Date Completed: 02/07/2019 Easting: -----		
Sheet: 1 of 1 Northing: -----		

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Gravel surface			
EX		0.10			CL	Nat.	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL22_0.1	No observable contamination.
		0.2					End of Hole at 0.10 m Target depth.			
		0.4								
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments


 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level

	Log Drawn By: 	Logged By: 	Date: 02/07/2019
	Contact: 	Checked By: 	Date:




CC LOG 19038 TVH CUDGEN GPJ CC GDT 7/18/19 11:12:40 AM - drawn by laurie white at www.reumad.com.au

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL23	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.50 m	
Contractor: Cavvanba				<div> CAVVANBA consulting</div>	
Method: Hand Auger					
Date Started: 02/07/2019		Ground Level: -----			
Date Completed: 02/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2			CL	Natural	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL23_0.1	No observable contamination.
		0.4							SL23_0.5	
		0.50					End of Hole at 0.50 m Target depth.			
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 02/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL24
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 0.50 m
Contractor: Cavvanba		
Method: Hand Auger		
Date Started: 02/07/2019 Ground Level: -----		
Date Completed: 02/07/2019 Easting: -----		CAVVANBA consulting
Sheet: 1 of 1 Northing: -----		


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2			CL	Natural	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL24_0.1	No observable contamination.
		0.4							SL24_0.5	
		0.50					End of Hole at 0.50 m Target depth.			
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 02/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL25	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.50 m	
Contractor: Cavvanba				<div> CAVVANBA consulting</div>	
Method: Hand Auger					
Date Started: 02/07/2019		Ground Level: -----			
Date Completed: 02/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2			CL	Natural	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL25_0.1	No observable contamination.
		0.4					Medium plasticity at depth.		SL25_0.5	
		0.50					End of Hole at 0.50 m Target depth.			
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: <div></div>	Logged By: <div></div>	Date: 02/07/2019
	Contact: <div></div>	Checked By: <div></div>	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL26	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.50 m	
Contractor: Cavvanba				<div> CAVVANBA consulting</div>	
Method: Hand Auger					
Date Started: 02/07/2019		Ground Level: -----			
Date Completed: 02/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2			CL	Natural	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL26_0.1	No observable contamination.
		0.4					Medium plasticity at depth.		SL26_0.5	
		0.50					End of Hole at 0.50 m Target depth.			
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: <div></div>	Logged By: <div></div>	Date: 02/07/2019
	Contact: <div></div>	Checked By: <div></div>	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen		Hole ID: SL27
Location / Site: 771 Cudgen Road, Cudgen NSW		Project Number: 19038
Client: Lendlease		Hole Depth: 0.50 m
Contractor: Cavvanba		
Method: Hand Auger		
Date Started: 02/07/2019 Ground Level: -----		
Date Completed: 02/07/2019 Easting: -----		CAVVANBA consulting
Sheet: 1 of 1 Northing: -----		

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2			CL	Natural	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL27_0.1	No observable contamination.
		0.4					Medium plasticity at depth.		SL27_0.5	
		0.50					End of Hole at 0.50 m Target depth.			
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								


Additional Comments


 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level

	Log Drawn By: Laurie White	Logged By: Glen Chisnall	Date: 02/07/2019
	Contact: laurie.white@reumad.com.au	Checked By:	Date:




CC LOG 19038 TVH CUDGEN GPJ CC GDT 7/18/19 11:12:43 AM - drawn by laurie white at www.reumad.com.au

Test Pit Log

Project Name:	TVH Lendlease Cudgen	SL28
		19038
		0.50 m
Contractor:		
Method:	Hand Auger	
Date Started:	02/07/2019	
Date Completed:	02/07/2019	
Sheet:		


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2			CL	Natural	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL28_0.1	No observable contamination.
		0.4					Medium plasticity at depth.		SL28_0.5	
		0.50					End of Hole at 0.50 m Target depth.			
		0.6								
		0.8								
		1.0								
		1.2								
		1.4								
		1.6								
		1.8								
		2.0								
		2.2								
		2.4								
		2.6								
		2.8								
		3.0								

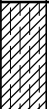
Additional Comments

 Encountered & Stabilised Groundwater Level
  Encountered Groundwater Level
  Stabilised Groundwater Level




	Log Drawn By: Checked By: 	Logged By: Date: 02/07/2019 Checked By: Date:
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Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL29	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.30 m	
Contractor: Cavvanba				<div> CAVVANBA consulting</div>	
Method: Hand Auger					
Date Started: 11/07/2019		Ground Level: -----			
Date Completed: 11/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Leaves on surface			
Hand Auger		0.2 0.30			CL	Clay	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL29_0.1	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.		SL29_0.3	

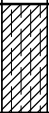
Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level


	Log Drawn By: 	Logged By: 	Date: 11/07/2019
	Contact: 	Checked By: 	Date:


Test Pit Log


Project Name:	TVH Lendlease Cudgen			Hole ID.	SL30
Location / Site:	771 Cudgen Road, Cudgen NSW			Project Number:	19038
Client:	Lendlease			Hole Depth:	0.30 m
Contractor:	Cavvanba				
Method:	Hand Auger				
Date Started:	11/07/2019	Ground Level:	-----		
Date Completed:	11/07/2019	Easting:	-----		
Sheet:	1 of 1	Northing:	-----		

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2 0.30			CL	clay	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL30_0.1	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.		SL30_0.3	

Additional Comments



 Encountered & Stabilised Groundwater Level

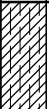

 Encountered Groundwater Level


 Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 11/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL31	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.30 m	
Contractor: Cavvanba				<div> CAVVANBA consulting</div>	
Method: Hand Auger					
Date Started: 11/07/2019		Ground Level: -----			
Date Completed: 11/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2 0.30			CL	Clay	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL31_0.1	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.		SL31_0.3	


Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 11/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL32	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.30 m	
Contractor: Cavvanba				<div> CAVVANBA consulting</div>	
Method: Hand Auger					
Date Started: 11/07/2019		Ground Level: -----			
Date Completed: 11/07/2019		Easting: -----			
Sheet: 1 of 1		Northing: -----			


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2 0.30			CL	Clay	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL32_0.1	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.		SL32_0.3	

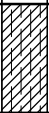
Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 11/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL33	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.30 m	
Contractor: Cavvanba					
Method: Hand Auger					
Date Started: 11/07/2019 Ground Level: -----					
Date Completed: 11/07/2019 Easting: -----					
Sheet: 1 of 1 Northing: -----					


Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Grass surface			
Hand Auger		0.2 0.30			CL	Clay	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL33_0.1	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.		SL33_0.3	

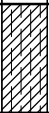
Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level




	Log Drawn By: 	Logged By: 	Date: 11/07/2019
	Contact: 	Checked By: 	Date:

Test Pit Log

Project Name: TVH Lendlease Cudgen				Hole ID. SL34	
Location / Site: 771 Cudgen Road, Cudgen NSW				Project Number: 19038	
Client: Lendlease				Hole Depth: 0.30 m	
Contractor: Cavvanba					
Method: Hand Auger					
Date Started: 11/07/2019 Ground Level: -----					
Date Completed: 11/07/2019 Easting: -----					
Sheet: 1 of 1 Northing: -----					

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	Observations / Comments
									ID No.	
							Leaves on surface			
Hand Auger		0.2 0.30			CL	Clay	Silty CLAY - red to brown, soft, low plasticity.	slightly moist	SL34_0.1	No observable contamination.
		0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0					End of Hole at 0.30 m Target depth.		SL34_0.3	

Additional Comments

 Encountered & Stabilised Groundwater Level  Encountered Groundwater Level  Stabilised Groundwater Level

	Log Drawn By: 	Logged By: 	Date: 11/07/2019
	Contact: 	Checked By: 	Date:

Appendix E

Groundwater sampling sheets

Ground Water Sampling Sheet

Job Name: <u>TWH Lendlease Cudgers</u>	Well No: <u>MW01</u>
Job Number: <u>19038</u>	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other
Recorded By: <u>GC</u>	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other
Date: <u>16/7/19</u>	Sample by: <u>GC</u>

PURGING

PURGE VOLUME	PURGE METHOD
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Bailer - Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other
Total Depth of Well (TD in m BTOC):	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Peristaltic <input type="checkbox"/> Other
Water Level Depth WL in m BTOC: <u>11.565</u>	PUMP INTAKE SETTING
Number of well volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other	Depth (m BTOC)
	Screen Interval (m BTOC) - Top : Bottom:

PURGE TIME

PURGE TIME PURGE RATE Bailer ACTUAL PURGE VOLUME
 Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (μ S/cm) m	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)
5	2	6.83	0.489	20.07	4.07	151	11.651	
10	4	7.06	0.431	20.35	2.21	146		
15	6	7.02	0.426	20.66	2.15	144	11.850	
		*	sampled	*				

Observations during purging (well condition, turbidity, colour, odour, sheen):

Slightly turbid, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☒ Surface ☐ Other

SAMPLING

SAMPLING METHOD

☒ Same as purge method

☐ Bailer - Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☐ Pump - Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name:

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
	ml Amber		unpreserved		
	ml plastic		HNO ₃		field filtered? Y / N
	ml VOA vials		HCl		

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No
<u>QW01</u>	<u>QW03</u>				
<u>MW01</u>	<u>QW04</u>				

Ground Water Sampling Sheet

Job Name: <u>TVH Lease Cudgen</u>	Well No: <u>MW02</u>
Job Number: <u>19038</u>	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other
Recorded By: <u>GC</u>	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other
Date: <u>16/7/19</u>	Sample by: <u>GC</u>

PURGING

PURGE VOLUME	PURGE METHOD
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Bailer - Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other
Total Depth of Well (TD in m BTOC):	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Peristaltic <input type="checkbox"/> Other
Water Level Depth WL in m BTOC: <u>11.90</u>	PUMP INTAKE SETTING
Number of well volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other	Depth (m BTOC)
	Screen Interval (m BTOC) - Top : Bottom:

PURGE TIME

PURGE TIME _____ PURGE RATE _____ ACTUAL PURGE VOLUME _____
 Start: _____ Stop: _____ Elapsed: _____ Initial: _____ Final: _____

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (μ S/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)
<u>5</u>	<u>1.5</u>	<u>7.09</u>	<u>0.384</u>	<u>21.11</u>	<u>1.89</u>	<u>141</u>		
<u>10</u>	<u>3</u>	<u>7.06</u>	<u>0.383</u>	<u>21.15</u>	<u>1.75</u>	<u>141</u>	<u>12.220</u>	
		<u>*</u>	<u>Sampled *</u>					

Observations during purging (well condition, turbidity, colour, odour, sheen):

Clear, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☒ Surface ☐ Other

SAMPLING

SAMPLING METHOD

☒ Same as purge method

☐ Bailer - Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☐ Pump - Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name:

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
	ml Amber		unpreserved		
	ml plastic		HNO ₃		field filtered? Y / N
	ml VOA vials		HCl		

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

Ground Water Sampling Sheet

Job Name: <u>TVH Leedbase Lodgen</u>	Well No: <u>mw03</u>
Job Number: <u>19038</u>	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other
Recorded By: <u>GC</u>	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other
Date: <u>16/7/19</u>	Sample by: <u>GC</u>

PURGING

PURGE VOLUME		PURGE METHOD	
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other		<input checked="" type="checkbox"/> Bailer - Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other	
Total Depth of Well (TD in m BTOC):		<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Peristaltic <input type="checkbox"/> Other	
Water Level Depth WL in m BTOC: <u>12.120</u>		PUMP INTAKE SETTING	
Number of well volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other		Depth (m BTOC)	
		Screen Interval (m BTOC) - Top :	Bottom:

PURGE TIME

PURGE TIME _____ PURGE RATE _____ ACTUAL PURGE VOLUME _____

Start: _____ Stop: _____ Elapsed: _____ Initial: _____ Final: _____

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (μ S/cm) m	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)
5	1.5	6.21	0.295	21.75	0.91	165		
10	3.0	6.25	0.298	21.83	0.88	164		
		* Sampled *						

Observations during purging (well condition, turbidity, colour, odour, sheen):

Clear, no odour or sheen.

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☒ Surface ☐ Other

SAMPLING

SAMPLING METHOD

☒ Same as purge method

☒ Bailer - Type: ☒ PVC ☐ SS ☐ Teflon ☐ Other ☐ Pump - Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name:

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
	ml Amber		unpreserved		
	ml plastic		HNO ₃		field filtered? Y / N
	ml VOA vials		HCl		

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

Ground Water Sampling Sheet

Job Name: <u>TVH Lendlease Cudger</u>	Well No: <u>MW04</u>
Job Number: <u>19038</u>	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other
Recorded By: <u>GC</u>	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other
Date: <u>16/7/19</u>	Sample by: <u>GC</u>

PURGING

PURGE VOLUME	PURGE METHOD
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Bailer - Type: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other
Total Depth of Well (TD in m BTOC):	<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Peristaltic <input type="checkbox"/> Other
Water Level Depth WL in m BTOC: <u>12.240</u>	PUMP INTAKE SETTING
Number of well volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other	Depth (m BTOC)
	Screen Interval (m BTOC) - Top : Bottom:

PURGE TIME

PURGE TIME _____ PURGE RATE _____ ACTUAL PURGE VOLUME _____
 Start: _____ Stop: _____ Elapsed: _____ Initial: _____ Final: _____

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (μ S/cm) m	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)
5	1.5	6.19	0.398	21.65	3.56	164		
10	3.0	6.24	0.405	21.83	3.48	164	12.350	

* Sampled *

Observations during purging (well condition, turbidity, colour, odour, sheen):

Clear, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☒ Surface ☐ Other

SAMPLING

SAMPLING METHOD

☐ Bailer - Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other ☐ Same as purge method
☐ Pump - Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name:

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
	ml Amber		unpreserved		
	ml plastic		HNO ₃		field filtered? Y / N
	ml VOA vials		HCl		

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

Ground Water Sampling Sheet

Job Name: <u>TVH Lease Cudgers</u>	Well No: <u>mwos</u>
Job Number: <u>19038</u>	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other
Recorded By: <u>GC</u>	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other
Date: <u>16/7/19</u>	Sample by: <u>GC</u>

PURGING

PURGE VOLUME		PURGE METHOD	
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other		<input checked="" type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other	
Total Depth of Well (TD in m BTOC):		<input checked="" type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input checked="" type="checkbox"/> Peristaltic <input type="checkbox"/> Other	
Water Level Depth WL in m BTOC: <u>1.660</u>		PUMP INTAKE SETTING	
Number of well volumes to be purged (# VOLS)		Depth (m BTOC)	
<input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other		Screen Interval (m BTOC) - Top :	Bottom:

PURGE TIME

PURGE TIME 25 min PURGE RATE 3.0 L/min ACTUAL PURGE VOLUME _____

Start: _____ Stop: _____ Elapsed: _____ Initial: _____ Final: _____

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (μ S/cm) m	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)
10	1.5	6.69	0.285	20.37	4.83	143		
15	2.5	6.71	0.279	20.30	1.95	143		
20	3.5	6.64	0.275	20.39	1.87	139	1.960	
		*	sampled*					

Observations during purging (well condition, turbidity, colour, odour, sheen):

Clear then turbid, no odor or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☒ Surface ☐ Other

SAMPLING

SAMPLING METHOD

☐ Bailer - Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other ☒ Same as purge method

☐ Pump - Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION

Sample Name: _____

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
	ml Amber		unpreserved		
	ml plastic		HNO ₃		field filtered? Y / N
	ml VOA vials		HCl		

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

Ground Water Sampling Sheet

Job Name: <u>TVH Lendlease Cudgen</u>	Well No: <u>MW06</u>
Job Number: <u>19038</u>	Well Type: <input checked="" type="checkbox"/> Monitor <input type="checkbox"/> Extractor <input type="checkbox"/> Other
Recorded By: <u>16/7/19</u>	Well Material: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Other
Date:	Sample by: _____

PURGING

PURGE VOLUME		PURGE METHOD	
Well Diameter (D in mm): <input checked="" type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> Other		<input type="checkbox"/> Bailer - Type: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> Teflon <input type="checkbox"/> Other	
Total Depth of Well (TD in m BTOC): _____		<input type="checkbox"/> Pump - Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Peristaltic <input type="checkbox"/> Other	
Water Level Depth WL in m BTOC): _____		PUMP INTAKE SETTING	
Number of well volumes to be purged (# VOLS) <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other		Depth (m BTOC) _____	
		Screen Interval (m BTOC) - Top : _____ Bottom: _____	

PURGE TIME

PURGE TIME _____ PURGE RATE _____ ACTUAL PURGE VOLUME _____

Start: _____ Stop: _____ Elapsed: _____ Initial: _____ Final: _____

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (μ S/cm)	Temp ($^{\circ}$ C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)

Well dry - unable to be sampled.

Observations during purging (well condition, turbidity, colour, odour, sheen): _____

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☐ Other

SAMPLING

SAMPLING METHOD

☐ Bailer - Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other ☐ Same as purge method

☐ Pump - Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: _____

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
	ml Amber		unpreserved		
	ml plastic		HNO ₃		field filtered? Y / N
	ml VOA vials		HCl		

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

Appendix F

Data Usability and Introduction to Data Usability

Data Usability Summary Assessment

A background to data usability is provided in this attachment. All site work was completed in accordance with standard Cavvanba sampling protocols, including a quality assurance/quality control (QA/QC) programme and standard operating procedures.

A data usability assessment was performed for the soil data collected by Cavvanba, as summarised in the following tables:

- Table 1.1, field QC samples summary,
- Table 1.2, summary of field QA/QC, and
- Table 1.3, summary of laboratory QA/QC.

The following data usability assessment has been conducted o laboratory batch number ES1920868.

Table 1.1: Field QC samples summary

	Total samples	Field duplicates ¹	Inter-lab duplicates ¹	Trip spike	Trip blank	Rinsate
<i>Soil – concrete – sediment</i>						
BTEXN	48	3 (6.25%)	3 (6.25%)	1	1	-
TRHs C6 – C10	48	3 (6.25%)	3 (6.25%)	1	1	-
TRHs C6 – C40	48	3 (6.25%)	3 (6.25%)	-	-	-
Metals ²	48	3 (6.25%)	3 (6.25%)	-	-	-
Lead	52	3 (5.57%)	3 (5.57%)	-	-	-
PAH	48	3 (6.25%)	3 (6.25%)	-	-	-
PCB	48	3 (6.25%)	3 (6.25%)	-	-	-
OCs	48	3 (6.25%)	3 (6.25%)	-	-	-
Asbestos in Soil	41	0 (0%)	0 (0%)	-	-	-

Notes:

1. Shows number of duplicate samples collected and the percentage of total samples analysed.
2. Arsenic, cadmium, chromium, copper, lead, nickel, zinc and mercury.
 – = not applicable, as trip spike/blank analysed for volatile compounds only.

Table 1.2: Summary of field QA/QC

Parameter	Complies	Comments ¹
<i>Precision</i>		
Standard operating procedures (SOPs) appropriate and complied with	Yes	Sampling was conducted in accordance with Cavvanba standard field operating procedures. The sampling methods generally complied with industry standards and guidelines.
Field duplicates	Partial	RPD ² criteria < 30% – 50%, frequency ≥ 5%. RPD exceedances were reported in field duplicates with respect to mercury. The frequency of field duplicates was within the acceptable range.

Parameter	Complies	Comments ¹
Inter-laboratory duplicates	Partial	RPD ² criteria < 30% – 50%, frequency ≥ 5%. RPD exceedances were reported for inter-laboratory duplicates with respect to lead, nickel and mercury. The frequency of inter-laboratory duplicates was within the acceptable range.
<i>Accuracy</i>		
Matrix spikes samples appropriate	Partial	≥ 1/media type. Some matrix spikes were conducted on anonymous samples.
<i>Representativeness</i>		
Sample collection - preservation	Yes	All samples were collected directly into laboratory supplied jars/Ziplock bags with no headspace.
Sample collection - sample splitting	Yes	-
Field equipment calibrated	No	No calibration records are included for the sampling equipment used.
Decontamination procedures	Yes	Decontamination procedures to prevent cross contamination between samples included use of dedicated sampling equipment, otherwise decontamination of the sampling equipment between each sampling location (using DECON 90) and the use of dedicated sampling containers provided by the laboratory. Soil samples were collected from the centre of the hand tool/excavator bucket, ensuring that soil that was sampled has not been in direct contact with the hand tool/excavator bucket to ensure they had not been directly in contact with the sampling equipment Field samplers also wore new disposable nitrile gloves during sampling.
Rinsate samples	Partial	Required ≥ 1/field batch, < LORs. No rinsate samples were collected/analysed as part of the investigation.
Trip blanks	Yes	≥ 1/field batch (volatiles), < LORs. One trip blank was collected/analysed for the soil samples, and analytical results were below the LORs.

Parameter	Complies	Comments ¹
Trip spikes	Yes	<p>≥ 1/field batch (volatiles), 70 - 130%, (recovery) or ≤ 30 - 50% (RPDs).</p> <p>One trip blank was collected/analysed for the soil samples, and RPDs were within acceptable limits.</p>
<i>Comparability</i>		
Consistent sampling staff	Yes	All field work was completed by Glen Chisnall of Cavanba Consulting.
Consistent weather/field conditions	Yes	-
<i>Completeness</i>		
Sample logs and field data	Yes	Standard field sampling sheets were used during the investigation.
Chain of Custody	Yes	-

Notes:

1. For QC samples, specified frequency and acceptance criteria shown.
2. RPD = relative percentage difference.

Table 1.3: Summary of laboratory QA/QC

Parameter	Complies	Notes ¹
<i>Precision</i>		
Laboratory duplicates	Partial	<p>laboratory specified RPD range, frequency ≥ 10%.</p> <p>Laboratory duplicate recovery outliers were reported for copper and zinc.</p> <p>The frequency of laboratory duplicates was outside the acceptable range for PAH/phenols.</p>
<i>Accuracy</i>		
Surrogate spikes	Yes	<p>Organics by GC, RPD criteria of 70% - 130%.</p> <p>No surrogate recovery outliers exist.</p> <p>The frequency of surrogate spikes was within the acceptable range.</p>
Matrix spikes analysis appropriate	Partial	<p>RPD criteria of ≥ 70% - 130%.</p> <p>Matrix spike recoveries were outside the acceptable limits for zinc and mercury.</p> <p>The frequency of matrix spike analysis was outside the acceptable range for PAH/phenols.</p>

Parameter	Complies	Notes ¹
Laboratory control samples (LCSs)	Partial	RPD criteria of 70% - 130%, frequency of ≥ 1 /lab batch Laboratory control sample recoveries were outside the acceptable limits for N-2-Fluorenyl acetamide, chrysene, beta-Endosulfan and ethion. The frequency of laboratory control samples was within the acceptable range.
Certified reference material (CRM)	n/a	-
<i>Representativeness</i>		
Sample condition	Yes	-
Holding times	Yes	No holding time exceedances were reported.
Laboratory blanks	Yes	≥ 1 /lab batch, < LORs.
<i>Comparability</i>		
NATA accredited laboratory	Yes	ALS is a NATA accredited laboratory (825). The secondary laboratory is Envirolab, which is also NATA accredited (2901).
NEPM methods or similar	Yes	ALS and Envirolab follow methods in accordance with the requirements of NEPC (amended 2013).
Limits of reporting (LORs) consistent and appropriate	Yes	-
<i>Completeness</i>		
Sample receipt	Yes	-
Laboratory Reports	Yes	-

Notes:

- For QC samples, acceptance criteria shown. Acceptance criteria can vary based on analyte, statistical data and laboratory specific methods. Laboratory specified relates to detected concentrations based on LORs, e.g. result < 10 x LOR = no limit, 10 – 20 x LOR = 0 - 50%, > 20 x LOR = 0 - 20%. See laboratory reports for specific details.

Summary and discussion

The following issues were identified with the data:

Precision

Outliers were reported for field and interlaboratory duplicate RPD recoveries with respect to zinc, mercury and lead. This is likely due to the inherent variability associated with metal concentrations in the soil matrix and is not considered to significantly detract from the data sets precision.

Laboratory duplicate recovery outliers were reported for copper and zinc which is also likely associated with the inherent variability associated with metal concentrations in the soil matrix.

The frequency of laboratory duplicates was outside the acceptable range for PAH/phenols. This was associated with samples analysed for TCLP leachate. This frequency error is considered acceptable and does not significantly detract from the data sets precision as all PAH (benzo(a)pyrene) leachate concentrations were below the laboratory LORs of 0.5 ug/L.

Accuracy

Matrix spike outliers were reported for zinc and mercury. The matrix spike recovery could not be determined as background levels were greater than or equal to four times the spike level in zinc. Additionally, the recoveries for mercury were less than the lower data quality objective. These outliers are considered acceptable and do not alter the outcome of the investigation as all reported concentrations of these analytes were below the Residential HILs A criteria.

Laboratory control sample recoveries were outside the acceptable limits for organochlorine pesticides consisting of N-2-Fluorenyl acetamide, chrysene, beta-Endosulfan and ethion. These outliers are considered acceptable and do not detract from the data sets accuracy as recoveries were marginally outside the limits i.e. 1 – 4%. Furthermore, concentrations of organochlorine pesticides (excluding sum of DDD + DDE + DDT) were all reported below the laboratory LORs.

Representativeness

No outliers have been reported for QC samples collected to assist in the qualification of representativeness.

Trip spike recoveries were within the specified RPDs and trip blank recoveries were below the laboratory LORs.

No rinsate samples were collected during the investigation. This is considered acceptable because single use sampling equipment was used.

Comparability

The data is considered to be acceptable, with experienced sampling staff used, NATA accredited laboratories used and all LORs below the relevant criteria.

Completeness

Laboratory and field documentation is considered to be complete.

Data Usability Summary Assessment

A background to data usability is provided in this attachment. All site work was completed in accordance with standard Cavvanba sampling protocols, including a quality assurance/quality control (QA/QC) programme and standard operating procedures.

A data usability assessment was performed for the soil data collected by Cavvanba, as summarised in the following tables:

- Table 1.1, field QC samples summary,
- Table 1.2, summary of field QA/QC, and
- Table 1.3, summary of laboratory QA/QC.

The following data usability assessment has been conducted o laboratory batch number ES1922153.

Table 1.1: Field QC samples summary

	Total samples	Field duplicates ¹	Inter-lab duplicates ¹	Trip spike	Trip blank	Rinsate
<i>Soil</i>						
PAH	6	1 (16.6%)	1 (16.6%)	-	-	-

Notes:

1. Shows number of duplicate samples collected and the percentage of total samples analysed.
2. Arsenic, cadmium, chromium, copper, lead, nickel, zinc and mercury.
- = not applicable, as trip spike/blank analysed for volatile compounds only.

Table 1.2: Summary of field QA/QC

Parameter	Complies	Comments ¹
<i>Precision</i>		
Standard operating procedures (SOPs) appropriate and complied with	Yes	Sampling was conducted in accordance with Cavvanba standard field operating procedures. The sampling methods generally complied with industry standards and guidelines.
Field duplicates	Yes	RPD ² criteria < 30% – 50%, frequency ≥ 5%. No RPD exceedances were reported. The frequency of field duplicates was within the acceptable range.
Inter-laboratory duplicates	Yes	RPD ² criteria < 30% – 50%, frequency ≥ 5%. No RPD exceedances were reported. The frequency of inter-laboratory duplicates was within the acceptable range.
<i>Accuracy</i>		
Matrix spikes samples appropriate	Partial	≥ 1/media type. Some matrix spikes were conducted on anonymous samples.

Parameter	Complies	Comments ¹
<i>Representativeness</i>		
Sample collection - preservation	Yes	All samples were collected directly into laboratory supplied jars/Ziplock bags with no headspace.
Sample collection - sample splitting	Yes	-
Field equipment calibrated	No	No calibration records are included for the sampling equipment used.
Decontamination procedures	Yes	<p>Decontamination procedures to prevent cross contamination between samples included use of dedicated sampling equipment, otherwise decontamination of the sampling equipment between each sampling location (using DECON 90) and the use of dedicated sampling containers provided by the laboratory.</p> <p>Soil samples were collected from the centre of the hand tool/excavator bucket, ensuring that soil that was sampled has not been in direct contact with the hand tool/excavator bucket to ensure they had not been directly in contact with the sampling equipment</p> <p>Field samplers also wore new disposable nitrile gloves during sampling.</p>
Rinsate samples	Partial	<p>Required $\geq 1/\text{field batch}$, < LORs.</p> <p>No rinsate samples were collected/analysed as part of the investigation.</p>
Trip blanks	No	<p>$\geq 1/\text{field batch}$ (volatiles), < LORs.</p> <p>No trip blank was collected/analysed for this batch.</p>
Trip spikes	NO	<p>$\geq 1/\text{field batch}$ (volatiles), 70 - 130%, (recovery) or $\leq 30 - 50\%$ (RPDs).</p> <p>No trip spike was collected/analysed for this batch.</p>
<i>Comparability</i>		
Consistent sampling staff	Yes	All field work was completed by Glen Chisnall of Cavanba Consulting.
Consistent weather/field conditions	Yes	-
<i>Completeness</i>		
Sample logs and field data	Yes	Standard field sampling sheets were used during the investigation.
Chain of Custody	Yes	-

Notes:

1. For QC samples, specified frequency and acceptance criteria shown.
2. RPD = relative percentage difference.

Table 1.3: Summary of laboratory QA/QC

Parameter	Complies	Notes ¹
<i>Precision</i>		
Laboratory duplicates	Yes	laboratory specified RPD range, frequency \geq 10%. No Laboratory duplicate recovery outliers were reported. The frequency of laboratory duplicates was within the acceptance criteria.
<i>Accuracy</i>		
Surrogate spikes	Yes	Organics by GC, RPD criteria of 70% - 130%. No surrogate recovery outliers exist. The frequency of surrogate spikes was within the acceptable range.
Matrix spikes analysis appropriate	Yes	RPD criteria of \geq 70% - 130%. Matrix spike recoveries were within the acceptable limits. The frequency of matrix spike analysis was within the acceptable range.
Laboratory control samples (LCSs)	Yes	RPD criteria of 70% - 130%, frequency of \geq 1/lab batch Laboratory control sample recoveries were within the acceptable limits. The frequency of laboratory control samples was within the acceptable range.
Certified reference material (CRM)	n/a	-
<i>Representativeness</i>		
Sample condition	Yes	-
Holding times	Yes	No holding time exceedances were reported.
Laboratory blanks	Yes	\geq 1/lab batch, < LORs.
<i>Comparability</i>		
NATA accredited laboratory	Yes	ALS is a NATA accredited laboratory (825). The secondary laboratory is Envirolab, which is also NATA accredited (2901).
NEPM methods or similar	Yes	ALS and Envirolab follow methods in accordance with the requirements of NEPC (amended 2013).

Parameter	Complies	Notes ¹
Limits of reporting (LORs) consistent and appropriate	Yes	-
<i>Completeness</i>		
Sample receipt	Yes	-
Laboratory Reports	Yes	-

Notes:

1. For QC samples, acceptance criteria shown. Acceptance criteria can vary based on analyte, statistical data and laboratory specific methods. Laboratory specified relates to detected concentrations based on LORs, e.g. result < 10 x LOR = no limit, 10 – 20 x LOR = 0 - 50%, > 20 x LOR = 0 - 20%. See laboratory reports for specific details.

Summary and discussion

The following issues were identified with the data:

Precision

No outliers have been reported for QC samples collected to assist in the qualification of precision.

Accuracy

No outliers have been reported for QC samples collected to assist in the qualification of accuracy. Surrogate spikes, matrix spikes and laboratory control sample recoveries were within acceptable ranges.

Representativeness

No outliers have been reported for QC samples collected to assist in the qualification of representativeness.

No rinsate samples were collected during the investigation. This is considered acceptable because single use sampling equipment was used.

Comparability

The data is considered to be acceptable, with experienced sampling staff used, NATA accredited laboratories used and all LORs below the relevant criteria.

Completeness

Laboratory and field documentation is considered to be complete.

Data Usability Summary Assessment

A background to data usability is provided in this attachment. All site work was completed in accordance with standard Cavvanba sampling protocols, including a quality assurance/quality control (QA/QC) programme and standard operating procedures.

A data usability assessment was performed for the soil data collected by Cavvanba, as summarised in the following tables:

- Table 1.1, field QC samples summary,
- Table 1.2, summary of field QA/QC, and
- Table 1.3, summary of laboratory QA/QC.

This data usability assessment was conducted on laboratory batch number ES1920749.

Table 1.1: Field QC samples summary

	Total samples	Field duplicates ¹	Inter-lab duplicates ¹	Trip spike	Trip blank	Rinsate
<i>Surface water</i>						
BTEXN	2	1 (50%)	1 (50%)	1	1	-
TRHs C6 – C10	2	1 (50%)	1 (50%)	1	1	-
TRHs C6 – C40	2	1 (50%)	1 (50%)	-	-	-
Metals ²	2	1 (50%)	1 (50%)	-	-	-
PAH	2	1 (50%)	1 (50%)	-	-	-
PCB	2	1 (50%)	1 (50%)	-	-	-
OCs	2	1 (50%)	1 (50%)	-	-	-

Notes:

1. Shows number of duplicate samples collected and the percentage of total samples analysed.
2. Arsenic, cadmium, chromium, copper, lead, nickel, zinc and mercury.
 - = not applicable, as trip spike/blank analysed for volatile compounds only.

Table 1.2: Summary of field QA/QC

Parameter	Complies	Comments ¹
<i>Precision</i>		
Standard operating procedures (SOPs) appropriate and complied with	Yes	Sampling was conducted in accordance with Cavvanba standard field operating procedures. The sampling methods generally complied with industry standards and guidelines.
Field duplicates	Partial	RPD ² criteria < 30% – 50%, frequency ≥ 5%. RPD exceedances were reported for chromium, TRHs C ₁₆ – C ₃₄ , naphthalene and total PAHs. The frequency of field duplicates was within the acceptable range.

Parameter	Complies	Comments ¹
Inter-laboratory duplicates	Partial	RPD ² criteria < 30% – 50%, frequency ≥ 5%. RPD exceedances were reported for cadmium, chromium, lead and TRHs C ₁₆ – C ₃₄ . The frequency of inter-laboratory duplicates was within the acceptable range.
<i>Accuracy</i>		
Matrix spikes samples appropriate	Partial	≥ 1/media type. Some matrix spikes were conducted on anonymous samples.
<i>Representativeness</i>		
Sample collection - preservation	Yes	All samples were collected directly into ALS laboratory supplied bottles with no headspace.
Sample collection - sample splitting	Yes	-
Field equipment calibrated	Yes	Horiba calibration records are included within the report.
Decontamination procedures	Yes	Decontamination procedures to prevent cross contamination between samples included use of dedicated sampling equipment, otherwise decontamination of the sampling equipment between each sampling location (using DECON 90) and the use of dedicated sampling containers provided by the laboratory. Water samples were collected using a single use disposable bailer. Field samplers also wore new disposable nitrile gloves during sampling.
Rinsate samples	Partial	Required ≥ 1/field batch, < LORs. -
Trip blanks	Yes	≥ 1/field batch (volatiles), < LORs. One trip blank was collected/analysed for the soil samples, and analytical results were below the LORs.
Trip spikes	Yes	≥ 1/field batch (volatiles), 70 - 130%, (recovery) or ≤ 30 - 50% (RPDs). One trip blank was collected/analysed for the soil samples, and RPDs were within acceptable limits.
<i>Comparability</i>		
Consistent sampling staff	Yes	All field work was completed by Glen Chisnall of Cavanba Consulting.

Parameter	Complies	Comments ¹
Consistent weather/field conditions	Yes	-
<i>Completeness</i>		
Sample logs and field data	Yes	Standard field sampling sheets were used during the investigation.
Chain of Custody	Yes	-

Notes:

1. For QC samples, specified frequency and acceptance criteria shown.
2. RPD = relative percentage difference.

Table 1.3: Summary of laboratory QA/QC

Parameter	Complies	Notes ¹
<i>Precision</i>		
Laboratory duplicates	Partial	<p>laboratory specified RPD range, frequency \geq 10%.</p> <p>Laboratory duplicate recoveries were within the laboratory specified global acceptance criteria.</p> <p>The frequency of laboratory duplicates was outside the acceptable range for PAH/phenols, pesticides, PCBs and TRH – semivolatile fraction.</p>
<i>Accuracy</i>		
Surrogate spikes	Yes	<p>Organics by GC, RPD criteria of 70% - 130%.</p> <p>No surrogate recovery outliers exist.</p> <p>The frequency of surrogate spikes was within the acceptable range.</p>
Matrix spikes analysis appropriate	Partial	<p>RPD criteria of \geq 70% - 130%.</p> <p>No matrix spike outliers occurred.</p> <p>The frequency of matrix spike analysis was outside the acceptable range for PAH/phenols, pesticides, PCBs and TRH volatiles/BTEX.</p>
Laboratory control samples (LCSs)	Yes	<p>RPD criteria of 70% - 130%, frequency of \geq 1/lab batch</p> <p>Laboratory control sample recoveries were within the laboratory specified global acceptance criteria.</p> <p>The frequency of laboratory control samples was within the acceptable range.</p>
Certified reference material (CRM)	n/a	-

Parameter	Complies	Notes ¹
<i>Representativeness</i>		
Sample condition	Yes	-
Holding times	No	Holding time analysis outliers were reported for PCBs, OCs, PAHs and total petroleum hydrocarbons.
Laboratory blanks	Yes	≥ 1/lab batch, < LORs.
<i>Comparability</i>		
NATA accredited laboratory	Yes	ALS is a NATA accredited laboratory (825). The secondary laboratory is Envirolab, which is also NATA accredited (2901).
NEPM methods or similar	Yes	ALS and Envirolab follow methods in accordance with the requirements of NEPC (amended 2013).
Limits of reporting (LORs) consistent and appropriate	Yes	-
<i>Completeness</i>		
Sample receipt	Yes	-
Laboratory Reports	Yes	-

Notes:

1. For QC samples, acceptance criteria shown. Acceptance criteria can vary based on analyte, statistical data and laboratory specific methods. Laboratory specified relates to detected concentrations based on LORs, e.g. result < 10 x LOR = no limit, 10 – 20 x LOR = 0 - 50%, > 20 x LOR = 0 - 20%. See laboratory reports for specific details.

Summary and discussion

The following issues were identified with the data:

Precision

Outliers were reported for field and interlaboratory duplicate RPD recoveries with respect to cadmium, chromium, lead, TRHs C16 – C34, naphthalene and total PAHs. This is considered acceptable and does not impact the outcome of the investigation as all primary concentrations of these analytes were higher than the duplicates (excluding naphthalene) and assessed against the relevant site criteria. For conservative purposes, naphthalene concentrations in field duplicate QW02 have been reported due to higher concentrations.

The frequency of laboratory duplicates was outside the acceptable range for PAH/phenols, pesticides, PCBs and TRH – semivolatile fraction. This is considered acceptable and does not detract from the data sets precision and or outcome of the investigation as concentrations of these analytes were reported below criteria.

Accuracy

The frequency of matrix spike analysis was outside the acceptable range for PAH/phenols, pesticides, PCBs and TRH volatiles/BTEX. This is considered acceptable

and does not detract from the data sets accuracy and or outcome of the investigation as concentrations of these analytes were reported below criteria.

Surrogate spikes and laboratory control sample recoveries were within acceptable ranges.

Representativeness

Trip spike recoveries were within the specified RPDs and trip blank recoveries were below the laboratory LORs.

Holding time exceedances were recorded for PCBs, OCs, PAHs and total petroleum hydrocarbons, and concentrations were all reported below the applied criteria. Additionally, no holding times were reported for TRHs C6 – C10 within the laboratory supplied vials, therefore concentrations of these analytes are considered acceptable.

No rinsate samples were collected during the investigation. This is considered acceptable because single use sampling equipment (bailer) was used.

Comparability

The data is considered to be acceptable, with experienced sampling staff used, NATA accredited laboratories used and all LORs below the relevant criteria.

Completeness

Laboratory and field documentation is considered to be complete.

Data Usability Summary Assessment

A background to data usability is provided in this attachment. All site work was completed in accordance with standard Cavvanba sampling protocols, including a quality assurance/quality control (QA/QC) programme and standard operating procedures.

A data usability assessment was performed for the soil data collected by Cavvanba, as summarised in the following tables:

- Table 1.1, field QC samples summary,
- Table 1.2, summary of field QA/QC, and
- Table 1.3, summary of laboratory QA/QC.

This data usability assessment was conducted on laboratory batch number ES1922275.

Table 1.1: Field QC samples summary

	Total samples	Field duplicates ¹	Inter-lab duplicates ¹	Trip spike	Trip blank	Rinsate
<i>Surface water</i>						
BTEXN	5	1 (20%)	1 (20%)	1	1	-
TRHs C6 – C10	5	1 (20%)	1 (20%)	1	1	-
TRHs C6 – C40	5	1 (20%)	1 (20%)	-	-	-
Metals ²	5	1 (20%)	1 (20%)	-	-	-
PAH	5	1 (20%)	1 (20%)	-	-	-
PCB	5	1 (20%)	1 (20%)	-	-	-
OCPs	5	1 (20%)	1 (20%)	-	-	-

Notes:

1. Shows number of duplicate samples collected and the percentage of total samples analysed.
2. Arsenic, cadmium, chromium, copper, lead, nickel, zinc and mercury.
 – = not applicable, as trip spike/blank analysed for volatile compounds only.

Table 1.2: Summary of field QA/QC

Parameter	Complies	Comments ¹
<i>Precision</i>		
Standard operating procedures (SOPs) appropriate and complied with	Yes	Sampling was conducted in accordance with Cavvanba standard field operating procedures. The sampling methods generally complied with industry standards and guidelines.
Field duplicates	Yes	RPD ² criteria < 30% – 50%, frequency ≥ 5%. No RPD exceedances were reported for field duplicates. The frequency of field duplicates was within the acceptable range.

Parameter	Complies	Comments ¹
Inter-laboratory duplicates	Yes	RPD ² criteria < 30% – 50%, frequency ≥ 5%. No RPD exceedances were reported for inter-laboratory duplicates. The frequency of inter-laboratory duplicates was within the acceptable range.
<i>Accuracy</i>		
Matrix spikes samples appropriate	Partial	≥ 1/media type. Some matrix spikes were conducted on anonymous samples.
<i>Representativeness</i>		
Sample collection - preservation	Yes	All samples were collected directly into laboratory supplied jars/bottles with no headspace.
Sample collection - sample splitting	Yes	-
Field equipment calibrated	No	No calibration records are included for the sampling equipment used.
Decontamination procedures	Yes	The groundwater monitoring wells were sampled using a peristaltic pump, with a new length of disposable tubing and or disposable bailer for each well to prevent cross-contamination. The interface probe was decontaminated between sample locations. Field samplers also wore new disposable nitrile gloves during sampling.
Rinsate samples	Yes	Required ≥ 1/field batch, < LORs.
Trip blanks	Yes	≥ 1/field batch (volatiles), < LORs. One trip blank was collected/analysed for the water samples, and analytical results were below the LORs.
Trip spikes	Yes	≥ 1/field batch (volatiles), 70 - 130%, (recovery) or ≤ 30 - 50% (RPDs). One trip blank was collected/analysed for the water samples, and RPDs were within acceptable limits.
<i>Comparability</i>		
Consistent sampling staff	Yes	All field work was completed by Glen Chisnall of Cavanba Consulting.
Consistent weather/field conditions	Yes	-

Parameter	Complies	Comments ¹
<i>Completeness</i>		
Sample logs and field data	Yes	Standard field sampling sheets were used during the investigation.
Chain of Custody	Yes	-

Notes:

1. For QC samples, specified frequency and acceptance criteria shown.
2. RPD = relative percentage difference.

Table 1.3: Summary of laboratory QA/QC

Parameter	Complies	Notes ¹
<i>Precision</i>		
Laboratory duplicates	Partial	laboratory specified RPD range, frequency \geq 10%. Laboratory duplicate recoveries were within the laboratory specified global acceptance criteria. The frequency of laboratory duplicates was outside the acceptable range for PAH/Phenols, pesticides, PCBs and TRHs.
<i>Accuracy</i>		
Surrogate spikes	Yes	Organics by GC, RPD criteria of 70% - 130%. No surrogate recovery outliers exist. The frequency of surrogate spikes was within the acceptable range.
Matrix spikes analysis appropriate	Partial	RPD criteria of \geq 70% - 130%. No matrix spike outliers occurred. The frequency of matrix spike analysis was outside the acceptable range for PAH/Phenols, pesticides, PCBs and TRHs.
Laboratory control samples (LCSs)	Yes	RPD criteria of 70% - 130%, frequency of \geq 1/lab batch Laboratory control sample recoveries were within the laboratory specified global acceptance criteria. The frequency of laboratory control samples was within the acceptable range.
Certified reference material (CRM)	n/a	-
<i>Representativeness</i>		
Sample condition	Yes	-

Parameter	Complies	Notes ¹
Holding times	Yes	No holding time exceedances were reported.
Laboratory blanks	Yes	≥ 1/lab batch, < LORs.
<i>Comparability</i>		
NATA accredited laboratory	Yes	ALS is a NATA accredited laboratory (825). The secondary laboratory is Envirolab, which is also NATA accredited (2901).
NEPM methods or similar	Yes	ALS and Envirolab follow methods in accordance with the requirements of NEPC (amended 2013).
Limits of reporting (LORs) consistent and appropriate	Partial	Limit of reporting for OCPs exceeded the applicable criteria with respect to water.
<i>Completeness</i>		
Sample receipt	Yes	-
Laboratory Reports	Yes	-

Notes:

1. For QC samples, acceptance criteria shown. Acceptance criteria can vary based on analyte, statistical data and laboratory specific methods. Laboratory specified relates to detected concentrations based on LORs, e.g. result < 10 x LOR = no limit, 10 – 20 x LOR = 0 - 50%, > 20 x LOR = 0 - 20%. See laboratory reports for specific details.

Summary and discussion

The following issues were identified with the data:

Precision

The frequency of laboratory duplicates was outside the acceptable range for PAH/Phenols, pesticides, PCBs and TRHs. This is considered acceptable and does not detract from the data sets precisions as concentrations of these analytes were either below the laboratory LORs or an order of magnitude below criteria.

Field and inter-laboratory duplicates RPDs and the frequency of these duplicates were within acceptable ranges.

Accuracy

The accuracy of the analysis is confirmed by the laboratory control sample recoveries within the acceptance criteria. Matrix spike frequency outliers were recorded for PAH/Phenols, pesticides, PCBs and TRHs. This is not considered to affect the outcome of the investigation, as an acceptable recovery was obtained for the laboratory control sample which indicates sample matrix interference. This is considered by the laboratory to be a more appropriate indicator.

Representativeness

No outliers have been reported for QC samples collected to assist in the qualification of representativeness.

Trip spike recoveries were within the specified RPDs and trip blank recoveries were below the laboratory LORs.

Comparability

The data is considered to be acceptable, with experienced sampling staff used, NATA accredited laboratories used and all LORs below the relevant criteria.

Laboratory LORs were in excess of the adopted assessment criteria for select analytes (OCPs in groundwater). This should be taken into consideration during future monitoring rounds.

Completeness

Laboratory and field documentation is considered to be complete.

Appendix G

Laboratory Reports

CERTIFICATE OF ANALYSIS

Work Order : **ES1920868**
Client : **CAVVANBA CONSULTING**
Contact : [REDACTED]
Address : PO BOX 2191
 BYRON BAY NSW 2481
Telephone : [REDACTED]
Project : ----
Order number : 19038
C-O-C number : ----
Sampler : [REDACTED]
Site : ----
Quote number : SYBQ/409/18
No. of samples received : 66
No. of samples analysed : 54

Page : 1 of 57
Laboratory : Environmental Division Sydney
Contact : [REDACTED]
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : [REDACTED]
Date Samples Received : 04-Jul-2019 14:00
Date Analysis Commenced : 06-Jul-2019
Issue Date : 10-Jul-2019 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. 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.

Signatories	Position	Accreditation Category
[REDACTED]	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
[REDACTED]	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
[REDACTED]	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	Organic Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EG035: Poor matrix spike recovery was obtained for Mercury on sample ES1920868 # 33,53. Confirmed by re-analysis.
- EP068: Positive results have been confirmed by re-extraction and re-analysis.
- EG005: Poor precision was obtained for Copper and Zinc on sample ES1920868-33. Results have been confirmed by re-extraction and re-analysis.
- EP080: The trip spike and its control have been analysed for volatile TPH and BTEX 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.
- EP068: Particular samples required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- EP066 : Particular samples required dilution due to sample matrix . LOR values have been adjusted accordingly.
- EP075: 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- 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.



- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL01_0.1	SL01_1.1	SL02_0.1	SL02_1.1	SL02_1.2
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-001	ES1920868-003	ES1920868-004	ES1920868-006	ES1920868-007
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		39.3	27.8	26.2	24.9	29.0
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Sample weight (dry)	----	0.01	g		358	255	245	323	403
APPROVED IDENTIFIER:	----	-	--		C. OWLER	C. OWLER	C. OWLER	C. OWLER	C. OWLER
EA200N: Asbestos Quantification (non-NATA)									
∅ Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
∅ Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)		<0.001	<0.001	<0.001	<0.001	<0.001
∅ Asbestos Containing Material	1332-21-4	0.1	g		<0.1	<0.1	<0.1	<0.1	<0.1
∅ Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)		<0.01	<0.01	<0.01	<0.01	<0.01
∅ Weight Used for % Calculation	----	0.0001	kg		0.358	0.255	0.245	0.323	0.403
∅ Fibrous Asbestos >7mm	----	0.0004	g		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		12	7	12	8	<5
Cadmium	7440-43-9	1	mg/kg		4	<1	11	<1	<1
Chromium	7440-47-3	2	mg/kg		25	24	42	24	20
Copper	7440-50-8	5	mg/kg		209	35	2220	52	14
Lead	7439-92-1	5	mg/kg		51	8	136	10	5
Nickel	7440-02-0	2	mg/kg		16	10	99	11	10
Zinc	7440-66-6	5	mg/kg		3700	121	3490	138	54
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.2	0.2	0.1	0.2	0.2
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.25	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.25	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.25	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.25	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.25	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SL01_0.1	SL01_1.1	SL02_0.1	SL02_1.1	SL02_1.2
Client sampling date / time				01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-001	ES1920868-003	ES1920868-004	ES1920868-006	ES1920868-007
				Result	Result	Result	Result	Result

EP068A: Organochlorine Pesticides (OC) - Continued

Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.08	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	0.14	0.20	<0.25	0.24	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.15	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<1.0	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.25	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<1.0	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.08	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	0.14	0.20	<0.08	0.24	<0.05

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
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
Benz(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



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL01_0.1	SL01_1.1	SL02_0.1	SL02_1.1	SL02_1.2
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-001	ES1920868-003	ES1920868-004	ES1920868-006	ES1920868-007
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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		490	<100	2070	<100	<100
C29 - C36 Fraction	----	100	mg/kg		200	<100	200	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		690	<50	2270	<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		120	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		520	<100	2170	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		180	<100	110	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		820	<50	2280	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		120	<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
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		105	124	104	107	111



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL01_0.1	SL01_1.1	SL02_0.1	SL02_1.1	SL02_1.2
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-001	ES1920868-003	ES1920868-004	ES1920868-006	ES1920868-007
					Result	Result	Result	Result	Result
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		126	84.6	68.0	95.0	130
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		98.7	92.1	70.9	94.8	81.3
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		78.9	77.4	78.1	78.7	76.8
2-Chlorophenol-D4	93951-73-6	0.5	%		83.0	83.8	83.4	85.0	80.8
2,4,6-Tribromophenol	118-79-6	0.5	%		86.1	72.8	80.5	72.4	67.8
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		94.3	90.8	89.6	91.9	88.7
Anthracene-d10	1719-06-8	0.5	%		90.3	99.6	95.0	98.8	97.4
4-Terphenyl-d14	1718-51-0	0.5	%		92.4	96.1	91.2	95.1	92.4
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		87.2	92.0	92.5	94.4	94.9
Toluene-D8	2037-26-5	0.2	%		100	108	104	104	106
4-Bromofluorobenzene	460-00-4	0.2	%		89.6	96.5	94.0	95.5	96.6



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL03_0.1	SL03_0.5	SL04_0.1	SL05_0.1	SL06_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-008	ES1920868-009	ES1920868-010	ES1920868-012	ES1920868-014
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		29.2	25.9	18.8	25.3	28.3
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Sample weight (dry)	----	0.01	g		352	504	539	465	472
APPROVED IDENTIFIER:	----	-	--		C. OWLER	C. OWLER	C. OWLER	C. OWLER	C. OWLER
EA200N: Asbestos Quantification (non-NATA)									
∅ Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
∅ Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)		<0.001	<0.001	<0.001	<0.001	<0.001
∅ Asbestos Containing Material	1332-21-4	0.1	g		<0.1	<0.1	<0.1	<0.1	<0.1
∅ Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)		<0.01	<0.01	<0.01	<0.01	<0.01
∅ Weight Used for % Calculation	----	0.0001	kg		0.352	0.504	0.539	0.465	0.472
∅ Fibrous Asbestos >7mm	----	0.0004	g		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	15	8	11
Cadmium	7440-43-9	1	mg/kg		4	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		28	17	20	26	20
Copper	7440-50-8	5	mg/kg		2540	17	120	34	34
Lead	7439-92-1	5	mg/kg		8	<5	10	10	10
Nickel	7440-02-0	2	mg/kg		12	9	11	11	12
Zinc	7440-66-6	5	mg/kg		116	44	347	127	88
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.1	0.1	0.2	0.2	0.2
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SL03_0.1	SL03_0.5	SL04_0.1	SL05_0.1	SL06_0.1
Client sampling date / time				01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-008	ES1920868-009	ES1920868-010	ES1920868-012	ES1920868-014
				Result	Result	Result	Result	Result

EP068A: Organochlorine Pesticides (OC) - Continued

Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	1.03	0.12	0.10
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.10	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.5	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	1.63	0.12	0.10

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
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
Benz(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



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL03_0.1	SL03_0.5	SL04_0.1	SL05_0.1	SL06_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-008	ES1920868-009	ES1920868-010	ES1920868-012	ES1920868-014
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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
EP075A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	0.5	mg/kg		<0.5	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	----	----
Pentachlorophenol	87-86-5	1	mg/kg		<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
2-Methylnaphthalene	91-57-6	0.5	mg/kg		<0.5	----	----	----	----
2-Chloronaphthalene	91-58-7	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	----	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL03_0.1	SL03_0.5	SL04_0.1	SL05_0.1	SL06_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-008	ES1920868-009	ES1920868-010	ES1920868-012	ES1920868-014
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg		<1	----	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
3-Methylcholanthrene	56-49-5	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 PAHs	----	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	----	----	----	----
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	0.5	mg/kg		<0.5	----	----	----	----
Diethyl phthalate	84-66-2	0.5	mg/kg		<0.5	----	----	----	----
Di-n-butyl phthalate	84-74-2	0.5	mg/kg		<0.5	----	----	----	----
Butyl benzyl phthalate	85-68-7	0.5	mg/kg		<0.5	----	----	----	----
bis(2-ethylhexyl) phthalate	117-81-7	5.0	mg/kg		<5.0	----	----	----	----
Di-n-octylphthalate	117-84-0	0.5	mg/kg		<0.5	----	----	----	----
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg		<0.5	----	----	----	----
N-Nitrosodiethylamine	55-18-5	0.5	mg/kg		<0.5	----	----	----	----
N-Nitrosopyrrolidine	930-55-2	1.0	mg/kg		<1.0	----	----	----	----
N-Nitrosomorpholine	59-89-2	0.5	mg/kg		<0.5	----	----	----	----
N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg		<0.5	----	----	----	----
N-Nitrosopiperidine	100-75-4	0.5	mg/kg		<0.5	----	----	----	----
N-Nitrosodibutylamine	924-16-3	0.5	mg/kg		<0.5	----	----	----	----
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	1.0	mg/kg		<1.0	----	----	----	----
Methapyrilene	91-80-5	0.5	mg/kg		<0.5	----	----	----	----
EP075E: Nitroaromatics and Ketones									
2-Picoline	109-06-8	0.5	mg/kg		<0.5	----	----	----	----
Acetophenone	98-86-2	0.5	mg/kg		<0.5	----	----	----	----
Nitrobenzene	98-95-3	0.5	mg/kg		<0.5	----	----	----	----
Isophorone	78-59-1	0.5	mg/kg		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL03_0.1	SL03_0.5	SL04_0.1	SL05_0.1	SL06_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-008	ES1920868-009	ES1920868-010	ES1920868-012	ES1920868-014
					Result	Result	Result	Result	Result
EP075E: Nitroaromatics and Ketones - Continued									
2,6-Dinitrotoluene	606-20-2	1.0	mg/kg		<1.0	----	----	----	----
2,4-Dinitrotoluene	121-14-2	1.0	mg/kg		<1.0	----	----	----	----
1-Naphthylamine	134-32-7	0.5	mg/kg		<0.5	----	----	----	----
4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg		<0.5	----	----	----	----
5-Nitro-o-toluidine	99-55-8	0.5	mg/kg		<0.5	----	----	----	----
Azobenzene	103-33-3	1	mg/kg		<1	----	----	----	----
1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg		<0.5	----	----	----	----
Phenacetin	62-44-2	0.5	mg/kg		<0.5	----	----	----	----
4-Aminobiphenyl	92-67-1	0.5	mg/kg		<0.5	----	----	----	----
Pentachloronitrobenzene	82-68-8	0.5	mg/kg		<0.5	----	----	----	----
Pronamide	23950-58-5	0.5	mg/kg		<0.5	----	----	----	----
Dimethylaminoazobenzene	60-11-7	0.5	mg/kg		<0.5	----	----	----	----
Chlorobenzilate	510-15-6	0.5	mg/kg		<0.5	----	----	----	----
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg		<0.5	----	----	----	----
Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg		<0.5	----	----	----	----
4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg		<0.5	----	----	----	----
4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg		<0.5	----	----	----	----
EP075G: Chlorinated Hydrocarbons									
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg		<0.5	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg		<0.5	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg		<0.5	----	----	----	----
Hexachloroethane	67-72-1	0.5	mg/kg		<0.5	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg		<0.5	----	----	----	----
Hexachloropropylene	1888-71-7	0.5	mg/kg		<0.5	----	----	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg		<0.5	----	----	----	----
Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg		<2.5	----	----	----	----
Pentachlorobenzene	608-93-5	0.5	mg/kg		<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	1.0	mg/kg		<1.0	----	----	----	----
EP075H: Anilines and Benzidines									
Aniline	62-53-3	0.5	mg/kg		<0.5	----	----	----	----
4-Chloroaniline	106-47-8	0.5	mg/kg		<0.5	----	----	----	----
2-Nitroaniline	88-74-4	1.0	mg/kg		<1.0	----	----	----	----
3-Nitroaniline	99-09-2	1.0	mg/kg		<1.0	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL03_0.1	SL03_0.5	SL04_0.1	SL05_0.1	SL06_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-008	ES1920868-009	ES1920868-010	ES1920868-012	ES1920868-014
					Result	Result	Result	Result	Result
EP075H: Anilines and Benzidines - Continued									
Dibenzofuran	132-64-9	0.5	mg/kg		<0.5	----	----	----	----
4-Nitroaniline	100-01-6	0.5	mg/kg		<0.5	----	----	----	----
Carbazole	86-74-8	0.5	mg/kg		<0.5	----	----	----	----
3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg		<0.5	----	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	mg/kg		<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	mg/kg		<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	mg/kg		<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	mg/kg		<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	mg/kg		<0.5	----	----	----	----
Aldrin	309-00-2	0.5	mg/kg		<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	mg/kg		<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	mg/kg		<0.5	----	----	----	----
4,4'-DDE	72-55-9	0.5	mg/kg		<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	mg/kg		<0.5	----	----	----	----
Endrin	72-20-8	0.5	mg/kg		<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	mg/kg		<0.5	----	----	----	----
4,4'-DDD	72-54-8	0.5	mg/kg		<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	mg/kg		<0.5	----	----	----	----
4,4'-DDT	50-29-3	1.0	mg/kg		<1.0	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	mg/kg		<0.5	----	----	----	----
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	0.5	mg/kg		<0.5	----	----	----	----
Dimethoate	60-51-5	0.5	mg/kg		<0.5	----	----	----	----
Diazinon	333-41-5	0.5	mg/kg		<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg		<0.5	----	----	----	----
Malathion	121-75-5	0.5	mg/kg		<0.5	----	----	----	----
Fenthion	55-38-9	0.5	mg/kg		<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	mg/kg		<0.5	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	mg/kg		<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	mg/kg		<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	mg/kg		<0.5	----	----	----	----
Ethion	563-12-2	0.5	mg/kg		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL03_0.1	SL03_0.5	SL04_0.1	SL05_0.1	SL06_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-008	ES1920868-009	ES1920868-010	ES1920868-012	ES1920868-014
					Result	Result	Result	Result	Result
EP075J: Organophosphorus Pesticides - Continued									
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
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		103	106	125	110	126
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		123	119	117	126	106
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		83.0	73.0	136	93.7	105
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		82.7	81.6	81.9	77.4	78.6
2-Chlorophenol-D4	93951-73-6	0.5	%		87.5	87.6	80.2	78.8	81.8



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL03_0.1	SL03_0.5	SL04_0.1	SL05_0.1	SL06_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-008	ES1920868-009	ES1920868-010	ES1920868-012	ES1920868-014
					Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
2,4,6-Tribromophenol	118-79-6	0.5	%		70.8	64.9	80.2	77.7	79.3
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		96.9	97.1	80.1	80.7	86.4
Anthracene-d10	1719-06-8	0.5	%		101	104	98.8	98.3	100
4-Terphenyl-d14	1718-51-0	0.5	%		99.6	100	99.0	97.4	102
EP075S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.5	%		65.6	----	----	----	----
Phenol-d6	13127-88-3	0.5	%		67.0	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		63.7	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		50.9	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.5	%		69.1	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.5	%		57.3	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.5	%		69.2	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		70.0	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		83.2	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		94.3	91.4	89.9	90.6	94.0
Toluene-D8	2037-26-5	0.2	%		105	104	101	102	105
4-Bromofluorobenzene	460-00-4	0.2	%		95.0	93.1	87.4	94.8	93.4



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL07_0.1	SL08_0.1	SL09_0.1	SL10_0.1	SL11_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-016	ES1920868-018	ES1920868-020	ES1920868-022	ES1920868-024
				Result	Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		24.2	29.7	28.6	24.0	28.3
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Sample weight (dry)	----	0.01	g		299	251	412	359	354
APPROVED IDENTIFIER:	----	-	--		C. OWLER	C. OWLER	C. OWLER	C. OWLER	C. OWLER
EA200N: Asbestos Quantification (non-NATA)									
Ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)		<0.001	<0.001	<0.001	<0.001	<0.001
Ø Asbestos Containing Material	1332-21-4	0.1	g		<0.1	<0.1	<0.1	<0.1	<0.1
Ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)		<0.01	<0.01	<0.01	<0.01	<0.01
Ø Weight Used for % Calculation	----	0.0001	kg		0.299	0.251	0.412	0.359	0.354
Ø Fibrous Asbestos >7mm	----	0.0004	g		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		18	14	15	17	19
Cadmium	7440-43-9	1	mg/kg		<1	1	<1	<1	2
Chromium	7440-47-3	2	mg/kg		22	25	28	25	46
Copper	7440-50-8	5	mg/kg		28	83	69	95	93
Lead	7439-92-1	5	mg/kg		13	20	16	18	79
Nickel	7440-02-0	2	mg/kg		13	14	13	13	25
Zinc	7440-66-6	5	mg/kg		186	899	269	325	3980
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.2	0.2	0.2	0.2	0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SL07_0.1	SL08_0.1	SL09_0.1	SL10_0.1	SL11_0.1
Client sampling date / time				01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-016	ES1920868-018	ES1920868-020	ES1920868-022	ES1920868-024
				Result	Result	Result	Result	Result

EP068A: Organochlorine Pesticides (OC) - Continued

Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	6.4
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.8
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	17.7
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	15.0
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	5.6
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	5.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	5.8
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	2.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	4.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL07_0.1	SL08_0.1	SL09_0.1	SL10_0.1	SL11_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-016	ES1920868-018	ES1920868-020	ES1920868-022	ES1920868-024
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	2.9
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	0.6
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	3.8
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	71.3
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	7.1
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	7.1
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	7.1
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	170
C29 - C36 Fraction	----	100	mg/kg		<100	130	<100	<100	130
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	130	<50	<50	300
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	140	<100	<100	260
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	140	<50	<50	260
^ >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
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		110	112	115	106	110



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL07_0.1	SL08_0.1	SL09_0.1	SL10_0.1	SL11_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-016	ES1920868-018	ES1920868-020	ES1920868-022	ES1920868-024
					Result	Result	Result	Result	Result
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		130	130	126	123	108
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		86.6	85.4	68.9	66.6	62.7
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		80.8	75.7	78.3	80.7	80.7
2-Chlorophenol-D4	93951-73-6	0.5	%		83.0	78.6	81.9	85.5	85.1
2,4,6-Tribromophenol	118-79-6	0.5	%		87.3	76.6	77.3	74.3	84.5
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		90.5	88.6	93.6	96.6	92.8
Anthracene-d10	1719-06-8	0.5	%		102	97.4	100	102	92.1
4-Terphenyl-d14	1718-51-0	0.5	%		110	105	110	112	105
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		93.2	89.0	91.0	93.0	89.4
Toluene-D8	2037-26-5	0.2	%		105	97.2	102	101	99.6
4-Bromofluorobenzene	460-00-4	0.2	%		93.2	87.5	88.8	92.8	89.3

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL12_0.1	SL13_0.1	SL13_0.5	SL13_1.0	SL14_0.5
Client sampling date / time				01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-026	ES1920868-028	ES1920868-029	ES1920868-030	ES1920868-032	
				Result	Result	Result	Result	Result	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	34.8	29.4	26.4	33.1	26.8	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No	
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	No	No	No	
Asbestos Type	1332-21-4	-	--	-	-	-	-	-	
Sample weight (dry)	----	0.01	g	343	381	387	322	426	
APPROVED IDENTIFIER:	----	-	--	C. OWLER	C. OWLER	C. OWLER	A. SMYLIE	A. SMYLIE	
EA200N: Asbestos Quantification (non-NATA)									
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	<0.001	<0.001	<0.001	<0.001	
ø Asbestos Containing Material	1332-21-4	0.1	g	<0.1	<0.1	<0.1	<0.1	<0.1	
ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)	<0.01	<0.01	<0.01	<0.01	<0.01	
ø Weight Used for % Calculation	----	0.0001	kg	0.343	0.381	0.387	0.322	0.426	
ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	16	10	7	<5	7	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	24	22	19	22	23	
Copper	7440-50-8	5	mg/kg	91	67	36	20	26	
Lead	7439-92-1	5	mg/kg	9	30	13	8	13	
Nickel	7440-02-0	2	mg/kg	12	15	13	13	13	
Zinc	7440-66-6	5	mg/kg	104	1050	150	161	213	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.2	0.1	0.2	
EN33: TCLP Leach									
Initial pH	----	0.1	pH Unit	----	----	5.7	----	6.1	
After HCl pH	----	0.1	pH Unit	----	----	1.4	----	1.4	
Extraction Fluid Number	----	1	-	----	----	1	----	1	
Final pH	----	0.1	pH Unit	----	----	5.0	----	5.0	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EP068A: Organochlorine Pesticides (OC)									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL12_0.1	SL13_0.1	SL13_0.5	SL13_1.0	SL14_0.5
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-026	ES1920868-028	ES1920868-029	ES1920868-030	ES1920868-032
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg		0.12	0.52	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		0.12	0.52	<0.05	<0.05	<0.05
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
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



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL12_0.1	SL13_0.1	SL13_0.5	SL13_1.0	SL14_0.5
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-026	ES1920868-028	ES1920868-029	ES1920868-030	ES1920868-032
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<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
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



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL12_0.1	SL13_0.1	SL13_0.5	SL13_1.0	SL14_0.5
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-026	ES1920868-028	ES1920868-029	ES1920868-030	ES1920868-032
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
^ 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
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		119	108	128	118	119
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		118	106	138	97.7	94.9
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		119	62.3	82.5	82.4	62.4
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		78.3	86.2	81.6	86.7	86.5
2-Chlorophenol-D4	93951-73-6	0.5	%		83.8	91.1	86.6	92.4	91.9
2,4,6-Tribromophenol	118-79-6	0.5	%		77.3	62.2	59.4	59.8	56.4
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		93.2	104	98.6	103	104
Anthracene-d10	1719-06-8	0.5	%		100	98.9	95.9	103	102
4-Terphenyl-d14	1718-51-0	0.5	%		106	107	104	108	108
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		86.8	83.9	93.6	92.2	91.3
Toluene-D8	2037-26-5	0.2	%		94.8	91.0	104	100	99.8
4-Bromofluorobenzene	460-00-4	0.2	%		87.2	84.1	92.8	91.0	92.0

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL14_1.0	SL15_0.1	SL15_0.5	SL16_0.1	SL16_0.5
Client sampling date / time				01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1920868-033	ES1920868-034	ES1920868-035	ES1920868-036	ES1920868-037	
				Result	Result	Result	Result	Result	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content		----	1.0	%	27.8	35.6	36.8	26.6	34.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected		1332-21-4	0.1	g/kg	No	No	No	Yes	No
Asbestos (Trace)		1332-21-4	5	Fibres	No	No	No	No	No
Asbestos Type		1332-21-4	-	--	-	-	-	Ch + Cr	-
Sample weight (dry)		----	0.01	g	406	327	297	384	360
APPROVED IDENTIFIER:		----	-	--	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
EA200N: Asbestos Quantification (non-NATA)									
Ø Asbestos (Fines and Fibrous <7mm)		1332-21-4	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Ø Asbestos (Fines and Fibrous FA+AF)		----	0.001	% (w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
Ø Asbestos Containing Material		1332-21-4	0.1	g	<0.1	<0.1	<0.1	0.9	<0.1
Ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)		1332-21-4	0.01	% (w/w)	<0.01	<0.01	<0.01	0.04	<0.01
Ø Weight Used for % Calculation		----	0.0001	kg	0.406	0.327	0.297	0.384	0.360
Ø Fibrous Asbestos >7mm		----	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic		7440-38-2	5	mg/kg	6	<5	<5	11	<5
Cadmium		7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium		7440-47-3	2	mg/kg	22	20	16	22	20
Copper		7440-50-8	5	mg/kg	142	20	15	82	15
Lead		7439-92-1	5	mg/kg	16	9	6	30	7
Nickel		7440-02-0	2	mg/kg	13	15	12	15	12
Zinc		7440-66-6	5	mg/kg	187	402	71	256	65
EG035T: Total Recoverable Mercury by FIMS									
Mercury		7439-97-6	0.1	mg/kg	0.2	0.2	0.1	0.2	0.2
EN33: TCLP Leach									
Initial pH		----	0.1	pH Unit	----	----	6.3	----	6.0
After HCl pH		----	0.1	pH Unit	----	----	1.4	----	1.5
Extraction Fluid Number		----	1	-	----	----	1	----	1
Final pH		----	0.1	pH Unit	----	----	5.0	----	5.0
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls		----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL14_1.0	SL15_0.1	SL15_0.5	SL16_0.1	SL16_0.5
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-033	ES1920868-034	ES1920868-035	ES1920868-036	ES1920868-037
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
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
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



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SL14_1.0	SL15_0.1	SL15_0.5	SL16_0.1	SL16_0.5
Client sampling date / time				01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-033	ES1920868-034	ES1920868-035	ES1920868-036	ES1920868-037
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<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
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



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL14_1.0	SL15_0.1	SL15_0.5	SL16_0.1	SL16_0.5
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-033	ES1920868-034	ES1920868-035	ES1920868-036	ES1920868-037
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
^ 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
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		93.5	84.8	91.3	80.2	86.8
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		102	110	115	100	110
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		106	65.2	67.8	60.7	62.6
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		83.5	80.4	84.0	84.7	88.4
2-Chlorophenol-D4	93951-73-6	0.5	%		88.4	85.6	85.1	83.2	83.0
2,4,6-Tribromophenol	118-79-6	0.5	%		54.9	58.7	71.9	66.8	72.7
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		97.7	96.6	84.8	80.0	89.2
Anthracene-d10	1719-06-8	0.5	%		98.0	96.0	105	94.6	104
4-Terphenyl-d14	1718-51-0	0.5	%		101	100	110	98.8	108
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		95.6	99.5	101	91.5	93.4
Toluene-D8	2037-26-5	0.2	%		90.8	101	96.3	85.2	90.2
4-Bromofluorobenzene	460-00-4	0.2	%		78.4	80.1	81.1	75.9	74.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL17_0.1	SL17_0.5	SL18_0.1	SL18_0.5	SL19_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-038	ES1920868-039	ES1920868-040	ES1920868-041	ES1920868-042
				Result	Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	----	----	----	----	----	12.5
Moisture Content	----	1.0	%	28.5	38.2	7.8	31.7	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No	----
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	No	No	No	----
Asbestos Type	1332-21-4	-	--	-	-	-	-	-	----
Sample weight (dry)	----	0.01	g	409	313	561	365	----	----
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	A. SMYLIE	C. OWLER	C. OWLER	----	----
EA200N: Asbestos Quantification (non-NATA)									
Ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	----
Ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	<0.001	<0.001	<0.001	<0.001	----
Ø Asbestos Containing Material	1332-21-4	0.1	g	<0.1	<0.1	<0.1	<0.1	<0.1	----
Ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)	<0.01	<0.01	<0.01	<0.01	<0.01	----
Ø Weight Used for % Calculation	----	0.0001	kg	0.409	0.313	0.561	0.365	----	----
Ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	7	<5	8	<5	----	----
Cadmium	7440-43-9	1	mg/kg	2	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	31	26	5	22	----	----
Copper	7440-50-8	5	mg/kg	82	27	15	20	----	----
Lead	7439-92-1	5	mg/kg	82	9	6	8	112	----
Nickel	7440-02-0	2	mg/kg	15	13	4	12	----	----
Zinc	7440-66-6	5	mg/kg	1190	91	271	74	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	0.1	0.2	<0.1	0.2	----	----
EN33: TCLP Leach									
Initial pH	----	0.1	pH Unit	----	5.6	----	5.9	7.2	----
After HCl pH	----	0.1	pH Unit	----	1.4	----	1.4	1.4	----
Extraction Fluid Number	----	1	-	----	1	----	1	1	----
Final pH	----	0.1	pH Unit	----	5.0	----	5.0	5.4	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL17_0.1	SL17_0.5	SL18_0.1	SL18_0.5	SL19_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-038	ES1920868-039	ES1920868-040	ES1920868-041	ES1920868-042
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		0.17	<0.05	<0.05	<0.05	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
4,4'-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		0.17	<0.05	<0.05	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL17_0.1	SL17_0.5	SL18_0.1	SL18_0.5	SL19_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-038	ES1920868-039	ES1920868-040	ES1920868-041	ES1920868-042
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		130	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		130	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg		160	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		160	<50	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<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	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL17_0.1	SL17_0.5	SL18_0.1	SL18_0.5	SL19_0.1
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-038	ES1920868-039	ES1920868-040	ES1920868-041	ES1920868-042
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		91.2	95.9	88.6	85.9	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		107	124	110	103	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		62.7	72.8	63.8	62.4	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		91.9	87.7	89.2	87.0	----
2-Chlorophenol-D4	93951-73-6	0.5	%		84.8	81.3	83.5	81.5	----
2,4,6-Tribromophenol	118-79-6	0.5	%		71.6	70.0	68.4	66.4	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		87.3	87.4	92.5	89.6	----
Anthracene-d10	1719-06-8	0.5	%		97.0	99.0	99.8	98.8	----
4-Terphenyl-d14	1718-51-0	0.5	%		102	100	103	101	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		88.3	98.7	97.6	93.8	----
Toluene-D8	2037-26-5	0.2	%		81.8	97.0	97.2	87.8	----
4-Bromofluorobenzene	460-00-4	0.2	%		73.0	74.9	77.3	75.9	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL20_0.1	SL21_0.1	SL22_0.1	SL23_0.1	SL23_0.5
Client sampling date / time					02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-043	ES1920868-044	ES1920868-045	ES1920868-046	ES1920868-047
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		26.6	28.7	31.5	----	----
Moisture Content	----	1.0	%		----	----	----	31.1	21.7
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	----	----	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		----	----	----	No	No
Asbestos Type	1332-21-4	-	--		----	----	----	-	-
Sample weight (dry)	----	0.01	g		----	----	----	362	378
APPROVED IDENTIFIER:	----	-	--		----	----	----	C. OWLER	A. SMYLIE
EA200N: Asbestos Quantification (non-NATA)									
Ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g		----	----	----	<0.0004	<0.0004
Ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)		----	----	----	<0.001	<0.001
Ø Asbestos Containing Material	1332-21-4	0.1	g		----	----	----	<0.1	<0.1
Ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)		----	----	----	<0.01	<0.01
Ø Weight Used for % Calculation	----	0.0001	kg		----	----	----	0.362	0.378
Ø Fibrous Asbestos >7mm	----	0.0004	g		----	----	----	<0.0004	<0.0004
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		----	----	----	<5	<5
Cadmium	7440-43-9	1	mg/kg		----	----	----	<1	<1
Chromium	7440-47-3	2	mg/kg		----	----	----	9	7
Copper	7440-50-8	5	mg/kg		----	----	----	52	28
Lead	7439-92-1	5	mg/kg		177	347	385	11	<5
Nickel	7440-02-0	2	mg/kg		----	----	----	20	19
Zinc	7440-66-6	5	mg/kg		----	----	----	174	40
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	----	----	0.2	0.1
EN33: TCLP Leach									
Initial pH	----	0.1	pH Unit		7.0	5.8	6.7	----	----
After HCl pH	----	0.1	pH Unit		1.4	1.4	1.6	----	----
Extraction Fluid Number	----	1	-		1	1	1	----	----
Final pH	----	0.1	pH Unit		5.0	5.0	5.1	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	----	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SL20_0.1	SL21_0.1	SL22_0.1	SL23_0.1	SL23_0.5
Client sampling date / time				02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-043	ES1920868-044	ES1920868-045	ES1920868-046	ES1920868-047
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	----	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	----	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	----	----	----	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SL20_0.1	SL21_0.1	SL22_0.1	SL23_0.1	SL23_0.5
Client sampling date / time				02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-043	ES1920868-044	ES1920868-045	ES1920868-046	ES1920868-047
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	<100
^ 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



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL20_0.1	SL21_0.1	SL22_0.1	SL23_0.1	SL23_0.5
Client sampling date / time					02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-043	ES1920868-044	ES1920868-045	ES1920868-046	ES1920868-047
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
^ Total Xylenes	----	0.5	mg/kg		----	----	----	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		----	----	----	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	79.6	92.2
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	94.6	103
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	63.0	64.1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	----	87.6	85.0
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	----	86.5	80.6
2,4,6-Tribromophenol	118-79-6	0.5	%		----	----	----	60.1	72.7
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	----	86.7	91.8
Anthracene-d10	1719-06-8	0.5	%		----	----	----	96.0	99.0
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	----	97.4	97.5
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	96.8	80.6
Toluene-D8	2037-26-5	0.2	%		----	----	----	93.1	100
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	74.2	86.4

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL24_0.1	SL24_0.5	SL25_0.1	SL25_0.5	SL26_0.1
Client sampling date / time				02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-048	ES1920868-049	ES1920868-050	ES1920868-051	ES1920868-052	
				Result	Result	Result	Result	Result	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	29.5	27.7	28.2	28.4	27.6	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No	
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	No	No	No	
Asbestos Type	1332-21-4	-	--	-	-	-	-	-	
Sample weight (dry)	----	0.01	g	372	357	335	344	398	
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	
EA200N: Asbestos Quantification (non-NATA)									
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	<0.001	<0.001	<0.001	<0.001	
ø Asbestos Containing Material	1332-21-4	0.1	g	<0.1	<0.1	<0.1	<0.1	<0.1	
ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)	<0.01	<0.01	<0.01	<0.01	<0.01	
ø Weight Used for % Calculation	----	0.0001	kg	0.372	0.357	0.335	0.344	0.398	
ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	9	11	10	11	12	
Copper	7440-50-8	5	mg/kg	28	30	34	34	35	
Lead	7439-92-1	5	mg/kg	6	6	6	8	16	
Nickel	7440-02-0	2	mg/kg	15	16	16	16	17	
Zinc	7440-66-6	5	mg/kg	87	78	80	90	331	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.1	0.2	0.2	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SL24_0.1	SL24_0.5	SL25_0.1	SL25_0.5	SL26_0.1
Client sampling date / time				02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-048	ES1920868-049	ES1920868-050	ES1920868-051	ES1920868-052
				Result	Result	Result	Result	Result

EP068A: Organochlorine Pesticides (OC) - Continued

Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.05	0.18	0.06	0.07
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	0.05	0.18	0.06	0.07

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
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
Benz(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



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL24_0.1	SL24_0.5	SL25_0.1	SL25_0.5	SL26_0.1
Client sampling date / time					02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-048	ES1920868-049	ES1920868-050	ES1920868-051	ES1920868-052
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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
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
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		87.4	86.7	91.3	95.8	93.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL24_0.1	SL24_0.5	SL25_0.1	SL25_0.5	SL26_0.1
Client sampling date / time					02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-048	ES1920868-049	ES1920868-050	ES1920868-051	ES1920868-052
				Result	Result	Result	Result	Result	Result
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		107	115	125	123	116
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		72.1	75.0	74.3	82.4	60.8
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		81.3	90.4	82.0	82.0	86.2
2-Chlorophenol-D4	93951-73-6	0.5	%		81.6	84.4	85.4	84.4	83.9
2,4,6-Tribromophenol	118-79-6	0.5	%		62.9	64.2	59.8	62.2	59.6
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		95.6	95.4	97.2	97.2	96.1
Anthracene-d10	1719-06-8	0.5	%		100	101	102	102	100
4-Terphenyl-d14	1718-51-0	0.5	%		101	103	101	106	105
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		73.6	84.4	81.2	81.8	94.0
Toluene-D8	2037-26-5	0.2	%		86.3	95.4	91.7	97.4	105
4-Bromofluorobenzene	460-00-4	0.2	%		77.5	84.7	81.8	85.6	93.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL26_0.5	SL27_0.1	SL27_0.5	SL28_0.1	SL28_0.5
Client sampling date / time					02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-053	ES1920868-054	ES1920868-055	ES1920868-056	ES1920868-057
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		25.7	31.0	29.1	32.4	27.8
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Sample weight (dry)	----	0.01	g		441	365	415	395	380
APPROVED IDENTIFIER:	----	-	--		A. SMYLLIE	A. SMYLLIE	A. SMYLLIE	A. SMYLLIE	A. SMYLLIE
EA200N: Asbestos Quantification (non-NATA)									
Ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)		<0.001	<0.001	<0.001	<0.001	<0.001
Ø Asbestos Containing Material	1332-21-4	0.1	g		<0.1	<0.1	<0.1	<0.1	<0.1
Ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)		<0.01	<0.01	<0.01	<0.01	<0.01
Ø Weight Used for % Calculation	----	0.0001	kg		0.441	0.365	0.415	0.395	0.380
Ø Fibrous Asbestos >7mm	----	0.0004	g		<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	<5	<5	5	5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	1
Chromium	7440-47-3	2	mg/kg		14	11	9	10	10
Copper	7440-50-8	5	mg/kg		18	31	29	36	38
Lead	7439-92-1	5	mg/kg		8	6	12	11	10
Nickel	7440-02-0	2	mg/kg		12	13	11	11	13
Zinc	7440-66-6	5	mg/kg		143	90	88	465	502
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.2	0.2	0.2	0.2	0.2
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

Client sampling date / time				SL26_0.5	SL27_0.1	SL27_0.5	SL28_0.1	SL28_0.5
				02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-053	ES1920868-054	ES1920868-055	ES1920868-056	ES1920868-057
				Result	Result	Result	Result	Result

EP068A: Organochlorine Pesticides (OC) - Continued

Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	0.10
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	0.10

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
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
Benz(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



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL26_0.5	SL27_0.1	SL27_0.5	SL28_0.1	SL28_0.5
Client sampling date / time					02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-053	ES1920868-054	ES1920868-055	ES1920868-056	ES1920868-057
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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
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
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		84.5	88.9	84.6	85.4	85.1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL26_0.5	SL27_0.1	SL27_0.5	SL28_0.1	SL28_0.5
Client sampling date / time					02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-053	ES1920868-054	ES1920868-055	ES1920868-056	ES1920868-057
				Result	Result	Result	Result	Result	Result
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		114	110	105	98.7	125
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		70.0	67.9	64.2	60.4	102
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		82.1	84.8	83.6	84.5	80.8
2-Chlorophenol-D4	93951-73-6	0.5	%		83.5	81.6	84.2	83.3	81.0
2,4,6-Tribromophenol	118-79-6	0.5	%		57.8	59.4	56.9	58.9	80.4
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		96.9	92.7	95.3	94.2	89.3
Anthracene-d10	1719-06-8	0.5	%		102	93.7	96.8	98.0	84.3
4-Terphenyl-d14	1718-51-0	0.5	%		97.0	102	106	104	96.8
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		87.5	81.3	84.7	83.8	96.4
Toluene-D8	2037-26-5	0.2	%		98.6	93.3	97.8	94.8	120
4-Bromofluorobenzene	460-00-4	0.2	%		87.6	81.5	84.4	83.3	109



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	CS_01	CS_02	SS_01	QS01	QS03
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	02-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-058	ES1920868-059	ES1920868-060	ES1920868-061	ES1920868-062
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		9.1	8.2	41.2	36.6	32.8
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	6	<5	<5	13
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		19	74	8	17	20
Copper	7440-50-8	5	mg/kg		7	12200	63	21	64
Lead	7439-92-1	5	mg/kg		7	128	10	9	28
Nickel	7440-02-0	2	mg/kg		6	21	12	10	10
Zinc	7440-66-6	5	mg/kg		1360	1590	129	455	419
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	0.1	0.1	0.2
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.2	<0.2	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.08	<0.08	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.15	<0.15	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.25	<0.25	<0.05	<0.05	<0.05

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	CS_01	CS_02	SS_01	QS01	QS03
Client sampling date / time				01-Jul-2019 00:00	01-Jul-2019 00:00	02-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	
Compound	CAS Number	LOR	Unit	ES1920868-058	ES1920868-059	ES1920868-060	ES1920868-061	ES1920868-062	
				Result	Result	Result	Result	Result	
EP068A: Organochlorine Pesticides (OC) - Continued									
4,4'-DDT	50-29-3	0.2	mg/kg	<1.0	<1.0	<0.2	<0.2	<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.25	<0.25	<0.05	<0.05	<0.05	
Methoxychlor	72-43-5	0.2	mg/kg	<1.0	<1.0	<0.2	<0.2	<0.2	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.08	<0.08	<0.05	<0.05	<0.05	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.08	<0.08	<0.05	<0.05	<0.05	
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	
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	
Benz(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	7660	9200	<100	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	190	360	<100	<100	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	7850	9560	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	CS_01	CS_02	SS_01	QS01	QS03
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	02-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1920868-058	ES1920868-059	ES1920868-060	ES1920868-061	ES1920868-062
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
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		100	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		7830	9440	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	150	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		7930	9590	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		100	<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		1.2	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		2.2	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		1.6	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		5.0	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		3.8	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		111	107	99.2	97.6	91.0
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		98.8	80.1	108	115	105
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		70.6	86.9	61.6	73.7	106
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		99.3	84.3	86.4	90.3	88.1
2-Chlorophenol-D4	93951-73-6	0.5	%		87.2	87.4	86.6	83.2	83.1
2,4,6-Tribromophenol	118-79-6	0.5	%		49.6	50.3	72.2	64.3	60.2
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		96.4	85.3	96.3	90.2	80.5
Anthracene-d10	1719-06-8	0.5	%		86.6	84.9	87.3	86.5	83.8
4-Terphenyl-d14	1718-51-0	0.5	%		99.5	96.7	100	99.9	96.9
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		76.4	78.8	75.8	74.1	74.0



Analytical Results

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

Client sample ID

				CS_01	CS_02	SS_01	QS01	QS03
Client sampling date / time				01-Jul-2019 00:00	01-Jul-2019 00:00	02-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-058	ES1920868-059	ES1920868-060	ES1920868-061	ES1920868-062
Result				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
Toluene-D8	2037-26-5	0.2	%	93.0	89.8	85.0	88.1	86.0
4-Bromofluorobenzene	460-00-4	0.2	%	85.6	82.2	79.8	82.0	78.8



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QS05	Trip Spike 6	Trip Blank	TSC 6	----
Client sampling date / time					02-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1920868-063	ES1920868-064	ES1920868-065	ES1920868-066	-----
					Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		27.5	----	----	----	----
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		10	----	----	----	----
Copper	7440-50-8	5	mg/kg		32	----	----	----	----
Lead	7439-92-1	5	mg/kg		6	----	----	----	----
Nickel	7440-02-0	2	mg/kg		12	----	----	----	----
Zinc	7440-66-6	5	mg/kg		81	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.2	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QS05	Trip Spike 6	Trip Blank	TSC 6	----
Client sampling date / time				02-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	----	
Compound	CAS Number	LOR	Unit	ES1920868-063	ES1920868-064	ES1920868-065	ES1920868-066	-----	
				Result	Result	Result	Result	----	
EP068A: Organochlorine Pesticides (OC) - Continued									
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----	
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.05	mg/kg	<0.05	----	----	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----	
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	52	<10	60	----	
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QS05	Trip Spike 6	Trip Blank	TSC 6	----
Client sampling date / time					02-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit		ES1920868-063	ES1920868-064	ES1920868-065	ES1920868-066	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	62	<10	72	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	34	<10	40	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	0.3	<0.2	0.3	----
Toluene	108-88-3	0.5	mg/kg		<0.5	13.1	<0.5	14.9	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	1.7	<0.5	2.1	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	8.8	<0.5	10.6	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	3.6	<0.5	4.2	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	27.5	<0.2	32.1	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	12.4	<0.5	14.8	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		92.1	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		104	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		79.2	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		84.8	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		82.5	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		63.6	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		88.2	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		85.6	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		99.1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		75.6	74.4	96.1	95.4	----



Analytical Results

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

Client sample ID

				QS05	Trip Spike 6	Trip Blank	TSC 6	----
Client sampling date / time				02-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	----
Compound	CAS Number	LOR	Unit	ES1920868-063	ES1920868-064	ES1920868-065	ES1920868-066	-----
				Result	Result	Result	Result	----
EP080S: TPH(V)/BTEX Surrogates - Continued								
Toluene-D8	2037-26-5	0.2	%	86.5	85.0	119	121	----
4-Bromofluorobenzene	460-00-4	0.2	%	81.6	78.0	110	109	----



Analytical Results

Sub-Matrix: TCLP LEACHATE
 (Matrix: WATER)

Client sample ID

				SL13_0.5	SL14_0.5	SL15_0.5	SL16_0.5	SL17_0.5
Client sampling date / time				01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-029	ES1920868-032	ES1920868-035	ES1920868-037	ES1920868-039
				Result	Result	Result	Result	Result
EG005(ED093)C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	7440-47-3	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	7440-66-6	0.1	mg/L	0.5	0.3	<0.1	<0.1	<0.1
EG035C: Leachable Mercury by FIMS								
Mercury	7439-97-6	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	27.0	27.9	24.4	24.2	30.4
2-Chlorophenol-D4	93951-73-6	1.0	%	64.1	58.0	68.6	55.5	64.2
2,4,6-Tribromophenol	118-79-6	1.0	%	75.3	74.6	89.8	65.5	88.2
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	91.0	92.2	86.8	87.9	98.6
Anthracene-d10	1719-06-8	1.0	%	97.6	88.8	85.0	96.6	81.9
4-Terphenyl-d14	1718-51-0	1.0	%	85.5	92.4	89.3	86.3	89.3



Analytical Results

Sub-Matrix: TCLP LEACHATE
 (Matrix: WATER)

Client sample ID

				SL18_0.5	SL19_0.1	SL20_0.1	SL21_0.1	SL22_0.1
Client sampling date / time				01-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00	02-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920868-041	ES1920868-042	ES1920868-043	ES1920868-044	ES1920868-045
				Result	Result	Result	Result	Result
EG005(ED093)C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	<0.1	----	----	----	----
Cadmium	7440-43-9	0.05	mg/L	<0.05	----	----	----	----
Chromium	7440-47-3	0.1	mg/L	<0.1	----	----	----	----
Copper	7440-50-8	0.1	mg/L	<0.1	----	----	----	----
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/L	<0.1	----	----	----	----
Zinc	7440-66-6	0.1	mg/L	<0.1	----	----	----	----
EG035C: Leachable Mercury by FIMS								
Mercury	7439-97-6	0.0010	mg/L	<0.0010	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	26.2	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	56.1	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	70.1	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	88.3	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%	94.0	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	90.1	----	----	----	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	SL01_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL01_1.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL02_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL02_1.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL02_1.2 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL03_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL03_0.5 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL04_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL05_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL06_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL07_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL08_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL09_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL10_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL11_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL12_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL13_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL13_0.5 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL13_1.0 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL14_0.5 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL14_1.0 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL15_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL15_0.5 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL16_0.1 - 01-Jul-2019 00:00	Mid brown soil with one piece of asbestos cement sheeting approximately 25x25x5mm.
EA200: Description	SL16_0.5 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL17_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL17_0.5 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL18_0.1 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL18_0.5 - 01-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL23_0.1 - 02-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL23_0.5 - 02-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL24_0.1 - 02-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL24_0.5 - 02-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL25_0.1 - 02-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL25_0.5 - 02-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL26_0.1 - 02-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL26_0.5 - 02-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL27_0.1 - 02-Jul-2019 00:00	Mid brown soil.

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Work Order : ES1920868
Client : CAVVANBA CONSULTING
Project : ----



Sub-Matrix: **SOIL**

<i>Method: Compound</i>	<i>Client sample ID - Client sampling date / time</i>	<i>Analytical Results</i>
EA200: Description	SL27_0.5 - 02-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL28_0.1 - 02-Jul-2019 00:00	Mid brown soil.
EA200: Description	SL28_0.5 - 02-Jul-2019 00:00	Mid brown soil.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	29	149
Phenol-d6	13127-88-3	32	128
2-Chlorophenol-D4	93951-73-6	32	128
2,4,6-Tribromophenol	118-79-6	13	121
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	33	125
1,2-Dichlorobenzene-D4	2199-69-1	34	108
2-Fluorobiphenyl	321-60-8	35	121
Anthracene-d10	1719-06-8	35	123
4-Terphenyl-d14	1718-51-0	33	125
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

Sub-Matrix: TCLP LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113

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Project : ----



Sub-Matrix: TCLP LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)T: PAH Surrogates - Continued			
4-Terphenyl-d14	1718-51-0	32	112

QUALITY CONTROL REPORT

Work Order	: ES1920868	Page	: 1 of 30
Client	: CAVVANBA CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: PO BOX 2191 BYRON BAY NSW 2481	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 6685 7811	Telephone	: +61 2 8784 8555
Project	: ----	Date Samples Received	: 04-Jul-2019
Order number	: 19038	Date Analysis Commenced	: 06-Jul-2019
C-O-C number	: ----	Issue Date	: 10-Jul-2019
Sampler	: [REDACTED]		
Site	: ----		
Quote number	: SYBQ/409/18		
No. of samples received	: 66		
No. of samples analysed	: 54		



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

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

This Quality Control Report contains the following information:

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
[REDACTED]	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
[REDACTED]	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	Organic Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2450351)									
ES1920868-001	SL01_0.1	EG005T: Chromium	7440-47-3	2	mg/kg	25	24	0.00	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	3700	3610	2.40	0% - 20%
ES1920868-001	SL01_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	4	3	41.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	12	28.3	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	11	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	209	224	7.12	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	51	76	39.0	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	186	161	14.4	0% - 20%
ES1920868-016	SL07_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	22	21	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	13	12	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	18	19	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	24	15.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	11	15.7	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2450352)									
ES1920868-033	SL14_1.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	22	24	9.70	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	13	15	11.3	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	8	35.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	142	# 189	28.2	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	16	31	67.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	187	# 97	63.1	0% - 20%
ES1920868-047	SL23_0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	7	7	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	19	20	5.59	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2450352) - continued									
ES1920868-047	SL23_0.5	EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	23	17.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	40	45	11.9	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2450356)									
ES1920868-053	SL26_0.5	EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.00	No Limit
ES1920868-053	SL26_0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	10	30.5	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	11	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	16	14.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	11	32.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	143	123	15.2	0% - 20%
ES1920868-063	QS05	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	10	10	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	12	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	32	30	6.12	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	81	74	9.20	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2450354)									
ES1920868-004	SL02_0.1	EA055: Moisture Content	----	0.1	%	26.2	25.1	4.32	0% - 20%
ES1920868-022	SL10_0.1	EA055: Moisture Content	----	0.1	%	24.0	25.6	6.60	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2450355)									
ES1920868-035	SL15_0.5	EA055: Moisture Content	----	0.1	%	36.8	38.8	5.26	0% - 20%
ES1920868-046	SL23_0.1	EA055: Moisture Content	----	0.1	%	31.1	31.4	0.943	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2450360)									
ES1920868-055	SL27_0.5	EA055: Moisture Content	----	0.1	%	29.1	29.2	0.00	0% - 20%
ES1920918-042	Anonymous	EA055: Moisture Content	----	0.1	%	20.7	20.4	1.20	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2450350)									
-----		EG035T: Mercury	7439-97-6	0.1	mg/kg	----	0.2	0.00	No Limit
ES1920868-016	SL07_0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2450353)									
-----		EG035T: Mercury	7439-97-6	0.1	mg/kg	----	0.1	0.00	No Limit
ES1920868-047	SL23_0.5	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: 2450357)									
-----		EG035T: Mercury	7439-97-6	0.1	mg/kg	----	0.2	0.00	No Limit
ES1920868-063	QS05	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2449171)									
ES1920868-016	SL07_0.1	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2449171) - continued									
ES1920868-008	SL03_0.1	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2449204)									
ES1920868-033	SL14_1.0	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1920868-047	SL23_0.5	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2449224)									
ES1920868-057	SL28_0.5	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2449170)									
ES1920868-016	SL07_0.1	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
ES1920868-008	SL03_0.1	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2449170) - continued									
ES1920868-008	SL03_0.1	EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2449205)									
ES1920868-033	SL14_1.0	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
ES1920868-047	SL23_0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2449205) - continued									
ES1920868-047	SL23_0.5	EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2449225)									
ES1920868-057	SL28_0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	0.10	0.08	18.3	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2449169)									
ES1920868-016	SL07_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



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2449169) - continued									
ES1920868-016	SL07_0.1	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		
ES1920868-008	SL03_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						
		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: 2449206)									
ES1920868-033	SL14_1.0	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



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2449206) - continued									
ES1920868-033	SL14_1.0	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		
ES1920868-047	SL23_0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2449226)									
ES1920868-057	SL28_0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2449226) - continued									
ES1920868-057	SL28_0.5	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): Dibenzo(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
EP075A: Phenolic Compounds (QC Lot: 2449172)									
ES1920868-008	SL03_0.1	EP075: Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pentachlorophenol	87-86-5	1	mg/kg	<1	<1	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2449172)									
ES1920868-008	SL03_0.1	EP075: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Chloronaphthalene	91-58-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2449172) - continued									
ES1920868-008	SL03_0.1	EP075: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1	<1	0.00	No Limit
EP075C: Phthalate Esters (QC Lot: 2449172)									
ES1920868-008	SL03_0.1	EP075: Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075D: Nitrosamines (QC Lot: 2449172)									
ES1920868-008	SL03_0.1	EP075: N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosopyrrolidine	930-55-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: Methapyrilene	91-80-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075E: Nitroaromatics and Ketones (QC Lot: 2449172)									
ES1920868-008	SL03_0.1	EP075: 2-Picoline	109-06-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Acetophenone	98-86-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Nitrobenzene	98-95-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Isophorone	78-59-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2,6-Dinitrotoluene	606-20-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: 2,4-Dinitrotoluene	121-14-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: 1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075E: Nitroaromatics and Ketones (QC Lot: 2449172) - continued									
ES1920868-008	SL03_0.1	EP075: Phenacetin	62-44-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pronamide	23950-58-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Azobenzene	103-33-3	1	mg/kg	<1	<1	0.00	No Limit
EP075F: Haloethers (QC Lot: 2449172)									
ES1920868-008	SL03_0.1	EP075: Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075G: Chlorinated Hydrocarbons (QC Lot: 2449172)									
ES1920868-008	SL03_0.1	EP075: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachloroethane	67-72-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachloropropylene	1888-71-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pentachlorobenzene	608-93-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Hexachlorobenzene (HCB)	118-74-1	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	<2.5	<2.5	0.00	No Limit
EP075H: Anilines and Benzidines (QC Lot: 2449172)									
ES1920868-008	SL03_0.1	EP075: Aniline	62-53-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Chloroaniline	106-47-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 2-Nitroaniline	88-74-4	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: 3-Nitroaniline	99-09-2	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075: Dibenzofuran	132-64-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4-Nitroaniline	100-01-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Carbazole	86-74-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 3,3`-Dichlorobenzidine	91-94-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 2449172)									
ES1920868-008	SL03_0.1	EP075: alpha-BHC	319-84-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: beta-BHC	319-85-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: gamma-BHC	58-89-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: delta-BHC	319-86-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Heptachlor	76-44-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Aldrin	309-00-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 2449172) - continued									
ES1920868-008	SL03_0.1	EP075: Heptachlor epoxide	1024-57-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: alpha-Endosulfan	959-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4,4`-DDE	72-55-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Dieldrin	60-57-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Endrin	72-20-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: beta-Endosulfan	33213-65-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4,4`-DDD	72-54-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Endosulfan sulfate	1031-07-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: 4,4`-DDT	50-29-3	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
EP075J: Organophosphorus Pesticides (QC Lot: 2449172)									
ES1920868-008	SL03_0.1	EP075: Dichlorvos	62-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Dimethoate	60-51-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Diazinon	333-41-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Malathion	121-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Fenthion	55-38-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Chlorpyrifos	2921-88-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Pirimphos-ethyl	23505-41-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Chlorfenvinphos	470-90-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Prothiofos	34643-46-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075: Ethion	563-12-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2449168)									
ES1920868-016	SL07_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
ES1920868-008	SL03_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: 2449203)									
ES1920868-033	SL14_1.0	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
ES1920868-047	SL23_0.5	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: 2449223)									
ES1920868-057	SL28_0.5	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

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2449809)									
ES1920868-001	SL01_0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1920868-016	SL07_0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2449810)									
ES1920868-033	SL14_1.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1920868-047	SL23_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2449811)									
ES1920868-057	SL28_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1920988-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2453124)									
ES1921173-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2449168)									
ES1920868-016	SL07_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
ES1920868-008	SL03_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: 2449203)									
ES1920868-033	SL14_1.0	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
ES1920868-047	SL23_0.5	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: 2449223)									
ES1920868-057	SL28_0.5	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: 2449809)									
ES1920868-001	SL01_0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1920868-016	SL07_0.1	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: 2449810)									
ES1920868-033	SL14_1.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1920868-047	SL23_0.5	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: 2449811)									
ES1920868-057	SL28_0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1920988-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2453124)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2453124) - continued									
ES1921173-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 2449809)									
ES1920868-001	SL01_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
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1920868-016	SL07_0.1	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
ES1920868-016	SL07_0.1	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: 2449810)									
ES1920868-033	SL14_1.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1920868-047	SL23_0.5	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
ES1920868-047	SL23_0.5	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: 2449811)									
ES1920868-057	SL28_0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1920868-057	SL28_0.5	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES1920988-002	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 2449811) - continued									
ES1920988-002	Anonymous	EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 2453124)									
ES1921173-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)C: Leachable Metals by ICPAES (QC Lot: 2453452)									
ES1920372-001	Anonymous	EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Zinc	7440-66-6	0.1	mg/L	0.4	0.4	0.00	No Limit
ES1920868-035	SL15_0.5	EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Zinc	7440-66-6	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EG035C: Leachable Mercury by FIMS (QC Lot: 2452229)									
EP1906147-001	Anonymous	EG035C: Mercury	7439-97-6	0.0001	mg/L	<0.0010	<0.0010	0.00	No Limit
ES1920988-003	Anonymous	EG035C: Mercury	7439-97-6	0.0001	mg/L	0.0042	0.0043	0.00	No Limit



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

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

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2450351)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	118	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	113	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	122	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	115	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	97.7	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	122	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	111	80	122
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2450352)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	97.9	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	95.6	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	106	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.2	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	97.7	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	104	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	111	80	122
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2450356)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	110	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	107	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	101	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	110	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	108	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	111	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	116	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2450350)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	86.2	70	105
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2450353)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	94.0	70	105
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2450357)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	96.4	70	105
EN33: TCLP Leach (QCLot: 2450408)								
EN33a: Initial pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: After HCl pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: Final pH	----	0.1	pH Unit	1.0	----	----	----	----



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EN33: TCLP Leach (QCLot: 2450409)								
EN33a: Initial pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: After HCl pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: Final pH	----	0.1	pH Unit	1.0	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2449171)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	107	62	126
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2449204)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	103	62	126
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2449224)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	107	62	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 2449170)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	99.9	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	101	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	99.0	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	99.5	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.8	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.0	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	85.5	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	100	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	104	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	105	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	101	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	66	116
EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.5	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	103	69	115
EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	97.7	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	76.6	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.8	62	124
EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	105	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.1	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	92.2	54	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2449205)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	90.7	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	96.6	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.3	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.6	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	67	115



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068A: Organochlorine Pesticides (OC) (QCLot: 2449205) - continued								
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	84.5	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	84.0	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	83.4	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	80.9	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	66	116
EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	83.2	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.4	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	84.7	69	115
EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	82.3	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	77.6	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.5	62	124
EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	82.3	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	83.0	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	89.2	54	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2449225)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	107	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	103	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	90.7	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.1	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.0	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.3	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	106	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	105	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	99.2	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.5	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	101	66	116
EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	99.2	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.4	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	100	69	115
EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.9	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	85.4	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	104	62	124
EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	103	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.0	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	90.9	54	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2449169)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	89.6	77	125



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2449169) - continued								
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	86.0	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	91.5	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	89.6	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	92.7	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	83.2	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	94.7	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	93.8	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	81.9	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	88.7	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	81.6	68	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	94.0	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	87.3	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	91.5	61	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	90.7	62	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	88.6	63	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2449206)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	95.8	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	94.1	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	98.6	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	94.9	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	93.5	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	92.0	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	95.0	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	95.4	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	92.3	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	91.6	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	94.2	68	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	92.1	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	97.8	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	94.2	61	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	97.6	62	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	96.5	63	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2449226)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	95.4	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	93.4	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	92.5	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	98.0	72	126



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2449226) - continued								
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	94.6	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	93.8	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	91.5	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	95.9	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	98.5	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	95.6	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	98.5	68	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	92.7	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	93.0	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	90.4	61	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	98.9	62	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	80.6	63	121
EP075A: Phenolic Compounds (QCLot: 2449172)								
EP075: Phenol	108-95-2	0.5	mg/kg	<0.5	1.5 mg/kg	103	64	114
EP075: 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	1.5 mg/kg	87.7	57	115
EP075: 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	1.5 mg/kg	100	55	117
EP075: 3- & 4-Methylphenol	1319-77-3	0.5	mg/kg	<0.5	1.5 mg/kg	92.2	46	122
EP075: 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	1.5 mg/kg	82.8	47	117
EP075: 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	1.5 mg/kg	88.3	14	108
EP075: 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	1.5 mg/kg	87.5	47	105
EP075: 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	1.5 mg/kg	94.6	48	110
EP075: 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	1.5 mg/kg	94.3	57	113
EP075: 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	1.5 mg/kg	86.3	49	109
EP075: 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	1.5 mg/kg	80.0	49	107
EP075: Pentachlorophenol	87-86-5	1	mg/kg	<1	3 mg/kg	40.2	12	76
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2449172)								
EP075: Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	97.4	62	118
EP075: 2-Methylnaphthalene	91-57-6	0.5	mg/kg	<0.5	1.5 mg/kg	90.4	58	116
EP075: 2-Chloronaphthalene	91-58-7	0.5	mg/kg	<0.5	1.5 mg/kg	97.3	54	112
EP075: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	93.8	56	114
EP075: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	93.7	62	112
EP075: Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	96.6	59	115
EP075: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	92.6	63	113
EP075: Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	97.0	57	111
EP075: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	111	58	114
EP075: Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	112	57	117
EP075: N-2-Fluorenyl Acetamide	53-96-3	0.5	mg/kg	<0.5	1.5 mg/kg	# 118	58	114
EP075: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	110	59	115



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLOT: 2449172) - continued								
EP075: Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	# 118	61	117
EP075: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1	3 mg/kg	96.1	57	119
EP075: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.5	mg/kg	<0.5	1.5 mg/kg	94.1	48	106
EP075: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	97.1	56	116
EP075: 3-Methylcholanthrene	56-49-5	0.5	mg/kg	<0.5	1.5 mg/kg	93.8	50	116
EP075: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	94.6	55	117
EP075: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	53	119
EP075: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	109	56	120
EP075C: Phthalate Esters (QCLOT: 2449172)								
EP075: Dimethyl phthalate	131-11-3	0.5	mg/kg	<0.5	1.5 mg/kg	95.8	60	118
EP075: Diethyl phthalate	84-66-2	0.5	mg/kg	<0.5	1.5 mg/kg	103	65	115
EP075: Di-n-butyl phthalate	84-74-2	0.5	mg/kg	<0.5	1.5 mg/kg	106	65	121
EP075: Butyl benzyl phthalate	85-68-7	0.5	mg/kg	<0.5	1.5 mg/kg	114	62	116
EP075: bis(2-ethylhexyl) phthalate	117-81-7	----	mg/kg	----	1.5 mg/kg	97.8	69	133
EP075: Di-n-octylphthalate	117-84-0	0.5	mg/kg	<0.5	1.5 mg/kg	91.5	62	124
EP075D: Nitrosamines (QCLOT: 2449172)								
EP075: N-Nitrosomethylethylamine	10595-95-6	0.5	mg/kg	<0.5	1.5 mg/kg	98.7	39	124
EP075: N-Nitrosodiethylamine	55-18-5	0.5	mg/kg	<0.5	1.5 mg/kg	88.5	59	117
EP075: N-Nitrosopyrrolidine	930-55-2	0.5	mg/kg	<0.5	1.5 mg/kg	97.5	53	125
EP075: N-Nitrosomorpholine	59-89-2	0.5	mg/kg	<0.5	1.5 mg/kg	100	65	121
EP075: N-Nitrosodi-n-propylamine	621-64-7	0.5	mg/kg	<0.5	1.5 mg/kg	91.6	59	123
EP075: N-Nitrosopiperidine	100-75-4	0.5	mg/kg	<0.5	1.5 mg/kg	87.9	57	115
EP075: N-Nitrosodibutylamine	924-16-3	0.5	mg/kg	<0.5	1.5 mg/kg	92.4	57	119
EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	0.5	mg/kg	<0.6	3 mg/kg	94.3	42	112
EP075: Methapyrilene	91-80-5	0.5	mg/kg	<0.5	1.5 mg/kg	71.8	16	123
EP075E: Nitroaromatics and Ketones (QCLOT: 2449172)								
EP075: 2-Picoline	109-06-8	0.5	mg/kg	<0.5	1.5 mg/kg	91.4	27	129
EP075: Acetophenone	98-86-2	0.5	mg/kg	<0.5	1.5 mg/kg	92.0	60	116
EP075: Nitrobenzene	98-95-3	0.5	mg/kg	<0.5	1.5 mg/kg	93.2	65	119
EP075: Isophorone	78-59-1	0.5	mg/kg	<0.5	1.5 mg/kg	83.7	62	116
EP075: 2.6-Dinitrotoluene	606-20-2	0.5	mg/kg	<0.5	1.5 mg/kg	95.9	58	118
EP075: 2.4-Dinitrotoluene	121-14-2	0.5	mg/kg	<0.5	1.5 mg/kg	94.6	59	115
EP075: 1-Naphthylamine	134-32-7	0.5	mg/kg	<0.5	1.5 mg/kg	69.7	18	112
EP075: 4-Nitroquinoline-N-oxide	56-57-5	0.5	mg/kg	<0.5	1.5 mg/kg	77.1	10	87
EP075: 5-Nitro-o-toluidine	99-55-8	0.5	mg/kg	<0.5	1.5 mg/kg	86.0	48	99
EP075: Azobenzene	103-33-3	1	mg/kg	<1	1.5 mg/kg	94.7	62	118



Sub-Matrix: **SOIL**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit	Result					
EP075E: Nitroaromatics and Ketones (QCLot: 2449172) - continued								
EP075: 1,3,5-Trinitrobenzene	99-35-4	0.5	mg/kg	<0.5	1.5 mg/kg	81.4	36	114
EP075: Phenacetin	62-44-2	0.5	mg/kg	<0.5	1.5 mg/kg	114	62	114
EP075: 4-Aminobiphenyl	92-67-1	0.5	mg/kg	<0.5	1.5 mg/kg	65.1	36	102
EP075: Pentachloronitrobenzene	82-68-8	0.5	mg/kg	<0.5	1.5 mg/kg	99.1	56	110
EP075: Pronamide	23950-58-5	0.5	mg/kg	<0.5	1.5 mg/kg	94.8	54	110
EP075: Dimethylaminoazobenzene	60-11-7	0.5	mg/kg	<0.5	1.5 mg/kg	108	48	108
EP075: Chlorobenzilate	510-15-6	0.5	mg/kg	<0.5	1.5 mg/kg	111	57	112
EP075F: Haloethers (QCLot: 2449172)								
EP075: Bis(2-chloroethyl) ether	111-44-4	0.5	mg/kg	<0.5	1.5 mg/kg	92.8	63	121
EP075: Bis(2-chloroethoxy) methane	111-91-1	0.5	mg/kg	<0.5	1.5 mg/kg	88.1	59	115
EP075: 4-Chlorophenyl phenyl ether	7005-72-3	0.5	mg/kg	<0.5	1.5 mg/kg	93.9	58	112
EP075: 4-Bromophenyl phenyl ether	101-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	98.3	58	110
EP075G: Chlorinated Hydrocarbons (QCLot: 2449172)								
EP075: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1.5 mg/kg	94.1	58	112
EP075: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1.5 mg/kg	91.5	58	116
EP075: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1.5 mg/kg	94.6	57	115
EP075: Hexachloroethane	67-72-1	0.5	mg/kg	<0.5	1.5 mg/kg	88.1	54	116
EP075: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1.5 mg/kg	86.7	63	108
EP075: Hexachloropropylene	1888-71-7	0.5	mg/kg	<0.5	1.5 mg/kg	90.0	39	110
EP075: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1.5 mg/kg	92.5	59	117
EP075: Hexachlorocyclopentadiene	77-47-4	2.5	mg/kg	<2.5	1.5 mg/kg	48.6	24	108
EP075: Pentachlorobenzene	608-93-5	0.5	mg/kg	<0.5	1.5 mg/kg	93.6	57	109
EP075: Hexachlorobenzene (HCB)	118-74-1	0.5	mg/kg	<0.5	1.5 mg/kg	98.6	59	111
EP075H: Anilines and Benzidines (QCLot: 2449172)								
EP075: Aniline	62-53-3	0.5	mg/kg	<0.5	1.5 mg/kg	76.7	13	108
EP075: 4-Chloroaniline	106-47-8	0.5	mg/kg	<0.5	1.5 mg/kg	56.3	21	99
EP075: 2-Nitroaniline	88-74-4	0.5	mg/kg	<0.5	1.5 mg/kg	95.2	52	112
EP075: 3-Nitroaniline	99-09-2	0.5	mg/kg	<0.5	1.5 mg/kg	82.4	32	94
EP075: Dibenzofuran	132-64-9	0.5	mg/kg	<0.5	1.5 mg/kg	92.5	60	110
EP075: 4-Nitroaniline	100-01-6	0.5	mg/kg	<0.5	1.5 mg/kg	105	42	112
EP075: Carbazole	86-74-8	0.5	mg/kg	<0.5	1.5 mg/kg	101	59	111
EP075: 3,3'-Dichlorobenzidine	91-94-1	0.5	mg/kg	<0.5	1.5 mg/kg	99.1	23	113
EP075I: Organochlorine Pesticides (QCLot: 2449172)								
EP075: alpha-BHC	319-84-6	0.5	mg/kg	<0.5	1.5 mg/kg	98.6	63	113
EP075: beta-BHC	319-85-7	0.5	mg/kg	<0.5	1.5 mg/kg	101	57	113
EP075: gamma-BHC	58-89-9	0.5	mg/kg	<0.5	1.5 mg/kg	99.9	61	117
EP075: delta-BHC	319-86-8	0.5	mg/kg	<0.5	1.5 mg/kg	97.2	64	118
EP075: Heptachlor	76-44-8	0.5	mg/kg	<0.5	1.5 mg/kg	105	55	115



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
				Concentration	LCS	Low	High	
EP075I: Organochlorine Pesticides (QCLot: 2449172) - continued								
EP075: Aldrin	309-00-2	0.5	mg/kg	<0.5	1.5 mg/kg	109	61	115
EP075: Heptachlor epoxide	1024-57-3	0.5	mg/kg	<0.5	1.5 mg/kg	108	56	118
EP075: alpha-Endosulfan	959-98-8	0.5	mg/kg	<0.5	1.5 mg/kg	104	65	125
EP075: 4,4`-DDE	72-55-9	0.5	mg/kg	<0.5	1.5 mg/kg	115	60	116
EP075: Dieldrin	60-57-1	0.5	mg/kg	<0.5	1.5 mg/kg	114	64	118
EP075: Endrin	72-20-8	0.5	mg/kg	<0.5	1.5 mg/kg	106	53	117
EP075: beta-Endosulfan	33213-65-9	0.5	mg/kg	<0.5	1.5 mg/kg	# 118	65	115
EP075: 4,4`-DDD	72-54-8	0.5	mg/kg	<0.5	1.5 mg/kg	111	62	118
EP075: Endosulfan sulfate	1031-07-8	0.5	mg/kg	<0.5	1.5 mg/kg	111	63	129
EP075: 4,4`-DDT	50-29-3	0.5	mg/kg	<0.5	1.5 mg/kg	110	46	122
EP075: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.5	mg/kg	<0.5	----	----	----	----
EP075: Sum of Aldrin + Dieldrin	309-00-2/60- 57-1	0.5	mg/kg	<0.5	----	----	----	----
EP075J: Organophosphorus Pesticides (QCLot: 2449172)								
EP075: Dichlorvos	62-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	52.4	46	112
EP075: Dimethoate	60-51-5	0.5	mg/kg	<0.5	1.5 mg/kg	104	63	119
EP075: Diazinon	333-41-5	0.5	mg/kg	<0.5	1.5 mg/kg	94.9	68	134
EP075: Chlorpyrifos-methyl	5598-13-0	0.5	mg/kg	<0.5	1.5 mg/kg	101	60	130
EP075: Malathion	121-75-5	0.5	mg/kg	<0.5	1.5 mg/kg	114	65	127
EP075: Fenthion	55-38-9	0.5	mg/kg	<0.5	1.5 mg/kg	112	60	116
EP075: Chlorpyrifos	2921-88-2	0.5	mg/kg	<0.5	1.5 mg/kg	104	63	113
EP075: Pirimphos-ethyl	23505-41-1	0.5	mg/kg	<0.5	1.5 mg/kg	108	65	115
EP075: Chlorfenvinphos	470-90-6	0.5	mg/kg	<0.5	1.5 mg/kg	92.4	59	103
EP075: Prothiofos	34643-46-4	0.5	mg/kg	<0.5	1.5 mg/kg	111	59	119
EP075: Ethion	563-12-2	0.5	mg/kg	<0.5	1.5 mg/kg	# 119	62	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449168)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	113	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	114	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	108	71	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449203)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	101	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	110	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	96.5	71	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449223)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	96.6	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	102	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	97.6	71	129



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)	
						Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449809)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	92.4	68	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449810)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	91.8	68	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449811)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	113	68	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2453124)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	100	68	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449168)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	115	77	125	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	111	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	108	63	131	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449203)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	98.0	77	125	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	105	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	93.5	63	131	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449223)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	101	77	125	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	99.1	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	100	63	131	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449809)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	93.6	68	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449810)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	90.4	68	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449811)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	117	68	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2453124)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	99.7	68	128	
EP080: BTEXN (QCLot: 2449809)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	85.2	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	84.1	67	121	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	85.4	65	117	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	85.0	66	118	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	87.2	68	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	83.0	63	119	
EP080: BTEXN (QCLot: 2449810)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	86.7	62	116	



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)	
						Concentration	LCS	Low	High
EP080: BTEXN (QCLot: 2449810) - continued									
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	83.0	67	121	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	74.6	65	117	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	82.0	66	118	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	84.1	68	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	91.1	63	119	
EP080: BTEXN (QCLot: 2449811)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	101	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	104	67	121	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	108	65	117	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	106	66	118	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	109	68	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	116	63	119	
EP080: BTEXN (QCLot: 2453124)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	102	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	101	67	121	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	97.5	65	117	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	97.7	66	118	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	97.2	68	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	103	63	119	
Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)	
						Concentration	LCS	Low	High
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2453452)									
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	0.1 mg/L	106	80	124	
EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	0.1 mg/L	102	80	118	
EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	0.1 mg/L	103	88	114	
EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	0.1 mg/L	105	86	114	
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	0.1 mg/L	101	80	118	
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	0.1 mg/L	103	83	115	
EG005C: Zinc	7440-66-6	0.1	mg/L	<0.1	0.1 mg/L	104	79	123	
EG035C: Leachable Mercury by FIMS (QCLot: 2452229)									
EG035C: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	92.1	79	109	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2452290)									
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	89.6	63	117	



Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2450351)							
ES1920868-001	SL01_0.1	EG005T: Arsenic	7440-38-2	50 mg/kg	81.2	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	88.5	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	102	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	87.9	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	90.4	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	88.6	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	# Not Determined	70	130
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2450352)							
ES1920868-033	SL14_1.0	EG005T: Arsenic	7440-38-2	50 mg/kg	74.6	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	97.3	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	115	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	98.6	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	80.3	70	130
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2450356)							
ES1920868-053	SL26_0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	76.6	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.3	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	91.4	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	97.8	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	93.9	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	95.9	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	94.0	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2450350)							
ES1920868-001	SL01_0.1	EG035T: Mercury	7439-97-6	5 mg/kg	76.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2450353)							
ES1920868-033	SL14_1.0	EG035T: Mercury	7439-97-6	5 mg/kg	# 56.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2450357)							
ES1920868-053	SL26_0.5	EG035T: Mercury	7439-97-6	5 mg/kg	# 69.5	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2449171)							
ES1920868-008	SL03_0.1	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	104	70	130



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2449204)							
ES1920868-033	SL14_1.0	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	101	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2449224)							
ES1920868-057	SL28_0.5	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	104	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2449170)							
ES1920868-008	SL03_0.1	EP068: gamma-BHC	58-89-9	0.5 mg/kg	101	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	103	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	106	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	89.2	70	130
		EP068: Endrin	72-20-8	2 mg/kg	91.0	70	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	83.9	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2449205)							
ES1920868-033	SL14_1.0	EP068: gamma-BHC	58-89-9	0.5 mg/kg	105	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	110	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	110	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	93.6	70	130
		EP068: Endrin	72-20-8	2 mg/kg	82.1	70	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	99.2	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2449225)							
ES1920868-057	SL28_0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	105	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	108	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	117	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	96.9	70	130
		EP068: Endrin	72-20-8	2 mg/kg	100	70	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	94.9	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2449169)							
ES1920868-008	SL03_0.1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	85.5	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	90.3	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2449206)							
ES1920868-033	SL14_1.0	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	89.2	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	89.1	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2449226)							
ES1920868-057	SL28_0.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	86.7	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	94.8	70	130
EP075A: Phenolic Compounds (QCLot: 2449172)							
ES1920868-008	SL03_0.1	EP075: Phenol	108-95-2	10 mg/kg	95.9	60	130
		EP075: 2-Chlorophenol	95-57-8	10 mg/kg	83.6	60	130



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075A: Phenolic Compounds (QCLot: 2449172) - continued							
ES1920868-008	SL03_0.1	EP075: 2-Nitrophenol	88-75-5	10 mg/kg	74.9	50	130
		EP075: 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	86.8	50	130
		EP075: Pentachlorophenol	87-86-5	10 mg/kg	22.8	10	130
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2449172)							
ES1920868-008	SL03_0.1	EP075: Acenaphthene	83-32-9	10 mg/kg	91.1	50	130
		EP075: Pyrene	129-00-0	10 mg/kg	86.9	50	130
EP075D: Nitrosamines (QCLot: 2449172)							
ES1920868-008	SL03_0.1	EP075: N-Nitrosodi-n-propylamine	621-64-7	10 mg/kg	81.4	50	130
EP075E: Nitroaromatics and Ketones (QCLot: 2449172)							
ES1920868-008	SL03_0.1	EP075: 2,4-Dinitrotoluene	121-14-2	10 mg/kg	85.6	40	130
EP075G: Chlorinated Hydrocarbons (QCLot: 2449172)							
ES1920868-008	SL03_0.1	EP075: 1,4-Dichlorobenzene	106-46-7	10 mg/kg	94.1	60	130
		EP075: 1,2,4-Trichlorobenzene	120-82-1	10 mg/kg	82.5	50	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449168)							
ES1920868-008	SL03_0.1	EP071: C10 - C14 Fraction	----	523 mg/kg	98.2	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	115	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	121	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449203)							
ES1920868-033	SL14_1.0	EP071: C10 - C14 Fraction	----	523 mg/kg	92.7	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	89.7	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	84.8	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449223)							
ES1920868-057	SL28_0.5	EP071: C10 - C14 Fraction	----	523 mg/kg	93.8	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	115	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	126	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449809)							
ES1920868-001	SL01_0.1	EP080: C6 - C9 Fraction	----	32.5 mg/kg	109	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449810)							
ES1920868-033	SL14_1.0	EP080: C6 - C9 Fraction	----	32.5 mg/kg	87.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2449811)							
ES1920868-057	SL28_0.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	104	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2453124)							
ES1921173-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	111	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449168)							
ES1920868-008	SL03_0.1	EP071: >C10 - C16 Fraction	----	860 mg/kg	108	73	137



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449168) - continued							
ES1920868-008	SL03_0.1	EP071: >C16 - C34 Fraction	----	3223 mg/kg	119	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	113	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449203)							
ES1920868-033	SL14_1.0	EP071: >C10 - C16 Fraction	----	860 mg/kg	95.4	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	88.1	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	76.0	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449223)							
ES1920868-057	SL28_0.5	EP071: >C10 - C16 Fraction	----	860 mg/kg	106	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	120	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	124	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449809)							
ES1920868-001	SL01_0.1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	104	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449810)							
ES1920868-033	SL14_1.0	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	85.9	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2449811)							
ES1920868-057	SL28_0.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	104	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2453124)							
ES1921173-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	107	70	130
EP080: BTEXN (QCLot: 2449809)							
ES1920868-001	SL01_0.1	EP080: Benzene	71-43-2	2.5 mg/kg	98.5	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	106	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	104	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	103	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	104	70	130
	EP080: Naphthalene	91-20-3	2.5 mg/kg	99.0	70	130	
EP080: BTEXN (QCLot: 2449810)							
ES1920868-033	SL14_1.0	EP080: Benzene	71-43-2	2.5 mg/kg	71.2	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	72.5	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	73.4	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	75.3	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	82.9	70	130
	EP080: Naphthalene	91-20-3	2.5 mg/kg	82.6	70	130	
EP080: BTEXN (QCLot: 2449811)							
ES1920868-057	SL28_0.5	EP080: Benzene	71-43-2	2.5 mg/kg	94.9	70	130



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 2449811) - continued							
ES1920868-057	SL28_0.5	EP080: Toluene	108-88-3	2.5 mg/kg	98.3	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	105	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	101	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	104	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	115	70	130
EP080: BTEXN (QCLot: 2453124)							
ES1921173-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	88.0	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	92.8	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	96.3	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	95.7	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	97.0	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	94.8	70	130
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2453452)							
ES1920376-001	Anonymous	EG005C: Arsenic	7440-38-2	1 mg/L	106	70	130
		EG005C: Cadmium	7440-43-9	0.25 mg/L	102	70	130
		EG005C: Chromium	7440-47-3	1 mg/L	99.1	70	130
		EG005C: Copper	7440-50-8	1 mg/L	97.1	70	130
		EG005C: Lead	7439-92-1	1 mg/L	100	70	130
		EG005C: Nickel	7440-02-0	1 mg/L	99.9	70	130
		EG005C: Zinc	7440-66-6	1 mg/L	107	70	130
EG035C: Leachable Mercury by FIMS (QCLot: 2452229)							
ES1920868-029	SL13_0.5	EG035C: Mercury	7439-97-6	0.01 mg/L	87.1	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order : ES1920868

Page : 1 of 21

Client : CAVVANBA CONSULTING

Contact : [REDACTED]

Project : ----

Site : ----

Sampler : [REDACTED]

Order number : 19038

Laboratory : Environmental Division Sydney

Telephone : +61 2 8784 8555

Date Samples Received : 04-Jul-2019

Issue Date : 10-Jul-2019

No. of samples received : 66

No. of samples analysed : 54

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	ES1920868--033	SL14_1.0	Copper	7440-50-8	28.2 %	0% - 20%	RPD exceeds LOR based limits
EG005(ED093)T: Total Metals by ICP-AES	ES1920868--033	SL14_1.0	Zinc	7440-66-6	63.1 %	0% - 20%	RPD exceeds LOR based limits
Laboratory Control Spike (LCS) Recoveries							
EP075B: Polynuclear Aromatic Hydrocarbons	QC-2449172-002	----	N-2-Fluorenyl Acetamide	53-96-3	118 %	58-114%	Recovery greater than upper control limit
EP075B: Polynuclear Aromatic Hydrocarbons	QC-2449172-002	----	Chrysene	218-01-9	118 %	61-117%	Recovery greater than upper control limit
EP075I: Organochlorine Pesticides	QC-2449172-002	----	beta-Endosulfan	33213-65-9	118 %	65-115%	Recovery greater than upper control limit
EP075J: Organophosphorus Pesticides	QC-2449172-002	----	Ethion	563-12-2	119 %	62-118%	Recovery greater than upper control limit
Matrix Spike (MS) Recoveries							
EG005(ED093)T: Total Metals by ICP-AES	ES1920868--001	SL01_0.1	Zinc	7440-66-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG035T: Total Recoverable Mercury by FIMS	ES1920868--033	SL14_1.0	Mercury	7439-97-6	56.2 %	70-130%	Recovery less than lower data quality objective
EG035T: Total Recoverable Mercury by FIMS	ES1920868--053	SL26_0.5	Mercury	7439-97-6	69.5 %	70-130%	Recovery less than lower data quality objective

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		01-Jul-2019	----	----	----	06-Jul-2019	15-Jul-2019	✓
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5,	CS_01,							
CS_02,	QS01,							
QS03								
Soil Glass Jar - Unpreserved (EA055)		02-Jul-2019	----	----	----	06-Jul-2019	16-Jul-2019	✓
SL19_0.1,	SL20_0.1,							
SL21_0.1,	SL22_0.1,							
SL23_0.1,	SL23_0.5,							
SL24_0.1,	SL24_0.5,							
SL25_0.1,	SL25_0.5,							
SL26_0.1,	SL26_0.5,							
SL27_0.1,	SL27_0.5,							
SL28_0.1,	SL28_0.5,							
SS_01,	QS05							

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag: Separate bag received (EA200)		01-Jul-2019	----	----	----	08-Jul-2019	28-Dec-2019	✓
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5								
Snap Lock Bag: Separate bag received (EA200)		02-Jul-2019	----	----	----	08-Jul-2019	29-Dec-2019	✓
SL23_0.1,	SL23_0.5,							
SL24_0.1,	SL24_0.5,							
SL25_0.1,	SL25_0.5,							
SL26_0.1,	SL26_0.5,							
SL27_0.1,	SL27_0.5,							
SL28_0.1,	SL28_0.5							

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200N: Asbestos Quantification (non-NATA)								
Snap Lock Bag: Separate bag received (EA200N)		01-Jul-2019	----	----	----	08-Jul-2019	28-Dec-2019	✓
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5,								
Snap Lock Bag: Separate bag received (EA200N)		02-Jul-2019	----	----	----	08-Jul-2019	29-Dec-2019	✓
SL23_0.1,	SL23_0.5,							
SL24_0.1,	SL24_0.5,							
SL25_0.1,	SL25_0.5,							
SL26_0.1,	SL26_0.5,							
SL27_0.1,	SL27_0.5,							
SL28_0.1,	SL28_0.5,							

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)		01-Jul-2019	08-Jul-2019	28-Dec-2019	✓	08-Jul-2019	28-Dec-2019	✓
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5,	CS_01,							
CS_02,	QS01,							
QS03								
Soil Glass Jar - Unpreserved (EG005T)		02-Jul-2019	08-Jul-2019	29-Dec-2019	✓	08-Jul-2019	29-Dec-2019	✓
SL19_0.1,	SL20_0.1,							
SL21_0.1,	SL22_0.1,							
SL23_0.1,	SL23_0.5,							
SL24_0.1,	SL24_0.5,							
SL25_0.1,	SL25_0.5,							
SL26_0.1,	SL26_0.5,							
SL27_0.1,	SL27_0.5,							
SL28_0.1,	SL28_0.5,							
SS_01,	QS05							

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)		01-Jul-2019	08-Jul-2019	29-Jul-2019	✓	09-Jul-2019	29-Jul-2019	✓
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5,	CS_01,							
CS_02,	QS01,							
QS03								
Soil Glass Jar - Unpreserved (EG035T)		02-Jul-2019	08-Jul-2019	30-Jul-2019	✓	09-Jul-2019	30-Jul-2019	✓
SL23_0.1,	SL23_0.5,							
SL24_0.1,	SL24_0.5,							
SL25_0.1,	SL25_0.5,							
SL26_0.1,	SL26_0.5,							
SL27_0.1,	SL27_0.5,							
SL28_0.1,	SL28_0.5,							
SS_01,	QS05							
EN33: TCLP Leach								
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN33a)		01-Jul-2019	07-Jul-2019	15-Jul-2019	✓	----	----	----
SL13_0.5,	SL14_0.5,							
SL15_0.5,	SL16_0.5,							
SL17_0.5,	SL18_0.5							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN33a)		02-Jul-2019	07-Jul-2019	29-Dec-2019	✓	----	----	----
SL19_0.1,	SL20_0.1,							
SL21_0.1,	SL22_0.1							

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✓	08-Jul-2019	15-Aug-2019	✓
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5,	CS_01,							
CS_02,	QS01,							
QS03								
Soil Glass Jar - Unpreserved (EP066)		02-Jul-2019	06-Jul-2019	16-Jul-2019	✓	08-Jul-2019	15-Aug-2019	✓
SL23_0.1,	SL23_0.5,							
SL24_0.1,	SL24_0.5,							
SL25_0.1,	SL25_0.5,							
SL26_0.1,	SL26_0.5,							
SL27_0.1,	SL27_0.5,							
SL28_0.1,	SL28_0.5,							
SS_01,	QS05							

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✓	08-Jul-2019	15-Aug-2019	✓
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5,	CS_01,							
CS_02,	QS01,							
QS03								
Soil Glass Jar - Unpreserved (EP068)								
SL23_0.1,	SL23_0.5,							
SL24_0.1,	SL24_0.5,							
SL25_0.1,	SL25_0.5,							
SL26_0.1,	SL26_0.5,							
SL27_0.1,	SL27_0.5,							
SL28_0.1,	SL28_0.5,							
SS_01,	QS05							



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))		01-Jul-2019	06-Jul-2019	15-Jul-2019	✔	08-Jul-2019	15-Aug-2019	✔
SL01_0.1, SL02_0.1, SL02_1.2, SL03_0.5, SL05_0.1, SL07_0.1, SL09_0.1, SL11_0.1, SL13_0.1, SL13_1.0, SL14_1.0, SL15_0.5, SL16_0.5, SL17_0.5, SL18_0.5, CS_02, QS03	SL01_1.1, SL02_1.1, SL03_0.1, SL04_0.1, SL06_0.1, SL08_0.1, SL10_0.1, SL12_0.1, SL13_0.5, SL14_0.5, SL15_0.1, SL16_0.1, SL17_0.1, SL18_0.1, CS_01, QS01,							
Soil Glass Jar - Unpreserved (EP075(SIM))		02-Jul-2019	06-Jul-2019	16-Jul-2019	✔	08-Jul-2019	15-Aug-2019	✔
SL23_0.1, SL24_0.1, SL25_0.1, SL26_0.1, SL27_0.1, SL28_0.1, SS_01,	SL23_0.5, SL24_0.5, SL25_0.5, SL26_0.5, SL27_0.5, SL28_0.5, QS05							
EP075A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✔	08-Jul-2019	15-Aug-2019	✔
SL03_0.1								
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✔	08-Jul-2019	15-Aug-2019	✔
SL03_0.1								
EP075C: Phthalate Esters								
Soil Glass Jar - Unpreserved (EP075)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✔	08-Jul-2019	15-Aug-2019	✔
SL03_0.1								
EP075D: Nitrosamines								
Soil Glass Jar - Unpreserved (EP075)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✔	08-Jul-2019	15-Aug-2019	✔
SL03_0.1								
EP075E: Nitroaromatics and Ketones								
Soil Glass Jar - Unpreserved (EP075)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✔	08-Jul-2019	15-Aug-2019	✔
SL03_0.1								

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Matrix: **SOIL**

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

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075F: Haloethers							
Soil Glass Jar - Unpreserved (EP075) SL03_0.1	01-Jul-2019	06-Jul-2019	15-Jul-2019	✓	08-Jul-2019	15-Aug-2019	✓
EP075G: Chlorinated Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075) SL03_0.1	01-Jul-2019	06-Jul-2019	15-Jul-2019	✓	08-Jul-2019	15-Aug-2019	✓
EP075H: Anilines and Benzidines							
Soil Glass Jar - Unpreserved (EP075) SL03_0.1	01-Jul-2019	06-Jul-2019	15-Jul-2019	✓	08-Jul-2019	15-Aug-2019	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075) SL03_0.1	01-Jul-2019	06-Jul-2019	15-Jul-2019	✓	08-Jul-2019	15-Aug-2019	✓
EP075J: Organophosphorus Pesticides							
Soil Glass Jar - Unpreserved (EP075) SL03_0.1	01-Jul-2019	06-Jul-2019	15-Jul-2019	✓	08-Jul-2019	15-Aug-2019	✓



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✔	06-Jul-2019	15-Jul-2019	✔
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5,	CS_01,							
CS_02,	QS01,							
QS03,	Trip Spike 6,							
Trip Blank								
Soil Glass Jar - Unpreserved (EP071)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✔	08-Jul-2019	15-Aug-2019	✔
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5,	CS_01,							
CS_02,	QS01,							
QS03								
Soil Glass Jar - Unpreserved (EP080)								
TSC 6								
Soil Glass Jar - Unpreserved (EP080)								



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons - Continued								
SL23_0.1, SL24_0.1, SL25_0.1, SL26_0.1, SL27_0.1, SL28_0.1, SS_01,	SL23_0.5, SL24_0.5, SL25_0.5, SL26_0.5, SL27_0.5, SL28_0.5, QS05	02-Jul-2019	06-Jul-2019	16-Jul-2019	✔	06-Jul-2019	16-Jul-2019	✔
Soil Glass Jar - Unpreserved (EP071)								
SL23_0.1, SL24_0.1, SL25_0.1, SL26_0.1, SL27_0.1, SL28_0.1, SS_01,	SL23_0.5, SL24_0.5, SL25_0.5, SL26_0.5, SL27_0.5, SL28_0.5, QS05	02-Jul-2019	06-Jul-2019	16-Jul-2019	✔	08-Jul-2019	15-Aug-2019	✔



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✔	06-Jul-2019	15-Jul-2019	✔
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5,	CS_01,							
CS_02,	QS01,							
QS03,	Trip Spike 6,							
Trip Blank								
Soil Glass Jar - Unpreserved (EP071)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✔	08-Jul-2019	15-Aug-2019	✔
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5,	CS_01,							
CS_02,	QS01,							
QS03								
Soil Glass Jar - Unpreserved (EP080)		01-Jul-2019	08-Jul-2019	15-Jul-2019	✔	08-Jul-2019	15-Jul-2019	✔
TSC 6								
Soil Glass Jar - Unpreserved (EP080)								

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Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
SL23_0.1, SL24_0.1, SL25_0.1, SL26_0.1, SL27_0.1, SL28_0.1, SS_01,	SL23_0.5, SL24_0.5, SL25_0.5, SL26_0.5, SL27_0.5, SL28_0.5, QS05	02-Jul-2019	06-Jul-2019	16-Jul-2019	✔	06-Jul-2019	16-Jul-2019	✔
Soil Glass Jar - Unpreserved (EP071)								
SL23_0.1, SL24_0.1, SL25_0.1, SL26_0.1, SL27_0.1, SL28_0.1, SS_01,	SL23_0.5, SL24_0.5, SL25_0.5, SL26_0.5, SL27_0.5, SL28_0.5, QS05	02-Jul-2019	06-Jul-2019	16-Jul-2019	✔	08-Jul-2019	15-Aug-2019	✔



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)		01-Jul-2019	06-Jul-2019	15-Jul-2019	✔	06-Jul-2019	15-Jul-2019	✔
SL01_0.1,	SL01_1.1,							
SL02_0.1,	SL02_1.1,							
SL02_1.2,	SL03_0.1,							
SL03_0.5,	SL04_0.1,							
SL05_0.1,	SL06_0.1,							
SL07_0.1,	SL08_0.1,							
SL09_0.1,	SL10_0.1,							
SL11_0.1,	SL12_0.1,							
SL13_0.1,	SL13_0.5,							
SL13_1.0,	SL14_0.5,							
SL14_1.0,	SL15_0.1,							
SL15_0.5,	SL16_0.1,							
SL16_0.5,	SL17_0.1,							
SL17_0.5,	SL18_0.1,							
SL18_0.5,	CS_01,							
CS_02,	QS01,							
QS03,	Trip Spike 6,							
Trip Blank								
Soil Glass Jar - Unpreserved (EP080)		01-Jul-2019	08-Jul-2019	15-Jul-2019	✔	08-Jul-2019	15-Jul-2019	✔
TSC 6								
Soil Glass Jar - Unpreserved (EP080)		02-Jul-2019	06-Jul-2019	16-Jul-2019	✔	06-Jul-2019	16-Jul-2019	✔
SL23_0.1,	SL23_0.5,							
SL24_0.1,	SL24_0.5,							
SL25_0.1,	SL25_0.5,							
SL26_0.1,	SL26_0.5,							
SL27_0.1,	SL27_0.5,							
SL28_0.1,	SL28_0.5,							
SS_01,	QS05							

Matrix: **WATER**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)		07-Jul-2019	09-Jul-2019	03-Jan-2020	✔	09-Jul-2019	03-Jan-2020	✔
SL13_0.5,	SL14_0.5,							
SL15_0.5,	SL16_0.5,							
SL17_0.5,	SL18_0.5,							
SL19_0.1,	SL20_0.1,							
SL21_0.1,	SL22_0.1							

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035C: Leachable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035C)		07-Jul-2019	----	----	----	08-Jul-2019	04-Aug-2019	✓
SL13_0.5,	SL14_0.5,							
SL15_0.5,	SL16_0.5,							
SL17_0.5,	SL18_0.5							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))		07-Jul-2019	08-Jul-2019	14-Jul-2019	✓	08-Jul-2019	17-Aug-2019	✓
SL13_0.5,	SL14_0.5,							
SL15_0.5,	SL16_0.5,							
SL17_0.5,	SL18_0.5							



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	5	50	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	5	49	10.20	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	5	49	10.20	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	6	56	10.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	8	60	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	5	50	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	7	64	10.94	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	3	50	6.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	3	49	6.12	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	3	49	6.12	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	56	5.36	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	50	6.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	64	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	3	50	6.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	3	49	6.12	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	3	49	6.12	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TCLP for Non & Semivolatile Analytes	EN33a	2	20	10.00	9.09	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	56	5.36	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	50	6.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	64	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	3	50	6.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	3	49	6.12	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	3	49	6.12	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	56	5.36	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	50	6.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



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

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Matrix Spikes (MS) - Continued							
TRH Volatiles/BTEX	EP080	4	64	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		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Mercury by FIMS	EG035C	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	20	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Mercury by FIMS	EG035C	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Mercury by FIMS	EG035C	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Mercury by FIMS	EG035C	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	20	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard




Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM 2013 with Confirmation of Identification by AS 4964 - 2004 Gravimetric determination of Asbestos Containing Material, Fibrous Asbestos, Asbestos Fines and sample weight and calculation of percentage concentrations per NEPM protocols. Asbestos (Fines and Fibrous FA+AF) is reported as the equivalent weight in the sample received after accounting for sub-sampling (where applicable for the <7mm and/or <2mm fractions).
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Leachable Mercury by FIMS	EG035C	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the TCLP solution. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
Semivolatile Organic Compounds	EP075	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)



Analytical Methods	Method	Matrix	Method Descriptions
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
TCLP for Non & Semivolatile Analytes	EN33a	SOIL	In house QWI-EN/33 referenced to USEPA SW846-1311: The TCLP procedure is designed to determine the mobility of both organic and inorganic analytes present in wastes. The standard TCLP leach is for non-volatile and Semivolatile test parameters.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Separatory Funnel Extraction of Liquids	ORG14	SOIL	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

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Email Reports to (will default to PM if no other addresses are listed): glen@cavvanba.com, ross@cavvanba.com		Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com		DATE/TIME: [REDACTED]																																																																																																																																																																									
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Environmental Division
Sydney
Work Order Reference
ES1920868

Barcode: [Barcode]
Telephone : + 61-2-6784 8555

ES1920868



CHAIN OF CUSTODY

ALS Laboratory:
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WOLLONGONG 99 Kenny Street Wollongong NSW 2503
Ph: 02 4325 3125 E: perth.mallee@alsglobal.com

CLIENT: Cavvanba Consulting		TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		<input type="checkbox"/> Standard TAT (List due date): <input checked="" type="checkbox"/> Non Standard or urgent TAT (List due date): 24 HR TAT		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Byron Bay		ALS QUOTE NO.: SYBQ/409/18		COC SEQUENCE NUMBER (Circle)		Custody Seal intact? Yes No N/A	
PROJECT: 19038				COC: 1 2 3 4 5 6 7		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER: 19038				OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: [REDACTED]		CONTACT PH: [REDACTED]		RECEIVED BY: [REDACTED]		Other comment:	
SAMPLER: [REDACTED]		SAMPLER MOBILE: [REDACTED]		RELINQUISHED BY: Glen Chinell		RELINQUISHED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME: 03/07/2019		DATE/TIME:	
Email Reports to (will default to PM if no other addresses are listed): [REDACTED]				DATE/TIME: 4/7/19 2pm		DATE/TIME:	
Email Invoice to (will default to PM if no other addresses are listed): [REDACTED]							

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).					Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (to codes below)	(refer)	TOTAL CONTAINERS	S-8 TRH (C6-C40)/BTEXN/PAH/OC/PCB / 8 Metals	EA200N Asbestos (Presence / Absence)	TCLP Metals/TCLP Benz(a)pyrene			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
15	SL06_0.3	1/07/2019	Soil	JAR		1	ON HOLD					
16	SL07_0.1	1/07/2019	Soil	JAR		1	x	x				
17	SL07_0.3	1/07/2019	Soil	JAR		1	ON HOLD					
18	SL08_0.1	1/07/2019	Soil	JAR		1	x	x				
19	SL08_0.3	1/07/2019	Soil	JAR		1	ON HOLD					
20	SL09_0.1	1/07/2019	Soil	JAR		1	x	x				
21	SL09_0.3	1/07/2019	Soil	JAR		1	ON HOLD					
22	SL10_0.1	1/07/2019	Soil	JAR		1	x	x				
23	SL10_0.3	1/07/2019	Soil	JAR		1	ON HOLD					
24	SL11_0.1	1/07/2019	Soil	JAR		1	x	x				
25	SL11_0.3	1/07/2019	Soil	JAR		1	ON HOLD					
26	SL12_0.1	1/07/2019	Soil	JAR		1	x	x				
27	SL12_0.3	1/07/2019	Soil	JAR		1	ON HOLD					
28	SL13_0.1	1/07/2019	Soil	JAR		1	x	x				
29	SL13_0.6	1/07/2019	Soil	JAR		1	x	x	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 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.



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

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NOOWRA 4/13 Garry Place, North Nowra NSW 2541
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WOLLONGONG 89 Kenny Street, Wollongong NSW 2500
Ph: 02 4229 3125 E: portkenbra@alsglobal.com

CLIENT: Cavvanba Consulting	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	<input type="checkbox"/> Standard TAT (List due date): <input checked="" type="checkbox"/> Non Standard or urgent TAT (List due date): 24 HR TAT	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:
OFFICE: Byron Bay	ALS QUOTE NO.: SYBQ/409/18	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OP: 1 2 3 4 5 6 7	
PROJECT: 19038	ORDER NUMBER: 19038		
PROJECT MANAGER: Ben Wackett	CONTACT PH: [REDACTED]	RELINQUISHED BY: [REDACTED]	RECEIVED BY: [REDACTED]
SAMPLER: Glen Chisnall	SAMPLER MOBILE: [REDACTED]	DATE/TIME: 03/07/2019	DATE/TIME: 4/7 2pm
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed):			
Email Invoice to (will default to PM if no other addresses are listed):			
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:			

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <i>to codes below</i>	(refer	TOTAL CONTAINERS	S-8 TRH (C6- C40)/BTXN/ PAH/OC/PCB / 8 Metals	EA200N Asbestos (Presence / Absence)	TCLP Metals/TCLP Benzene/Pyrene	Lead & TCLP Lead			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
30	SL13_1.0	1/07/2019	Soil	JAR		1	X	X						
31	SL14_0.1	1/07/2019	Soil	JAR		1	ON HOLD							
32	SL14_0.5	1/07/2019	Soil	JAR		1	X	X	X					
33	SL14_1.0	1/07/2019	Soil	JAR		1	X	X						
34	SL15_0.1	1/07/2019	Soil	JAR		1	X	X						
35	SL15_0.5	1/07/2019	Soil	JAR		1	X	X	X					
36	SL16_0.1	1/07/2019	Soil	JAR		1	X	X						
37	SL16_0.5	1/07/2019	Soil	JAR		1	X	X	X					
38	SL17_0.1	1/07/2019	Soil	JAR		1	X	X						
39	SL17_0.5	1/07/2019	Soil	JAR		1	X	X	X					
40	SL18_0.1	1/07/2019	Soil	JAR		1	X	X						
41	SL18_0.5	1/07/2019	Soil	JAR		1	X	X	X					
42	SL19_0.1	2/07/2019	Soil	JAR		1				X				
43	SL20_0.1	2/07/2019	Soil	JAR		1				X				
TOTAL														

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CHAIN OF CUSTODY

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Ph: 02 4229 5125 E: perth@alsglobal.com

CLIENT: Cavvanba Consulting		TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		<input type="checkbox"/> Standard TAT (List due date): <input checked="" type="checkbox"/> Non Standard or urgent TAT (List due date): 24 HR TAT		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Byron Bay		ALS QUOTE NO.: SYBQ/409/18		COC SEQUENCE NUMBER (Circle)		Custody Seal Intact? Yes No N/A	
PROJECT: 19038				COC: 1 2 3 4 5 6 7		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER: 19038				OF: 1 2 3 4 5 6 7		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER		CONTACT PH:		RECEIVED BY:		RECEIVED BY:	
SAMPLER		SAMPLER MO		RELINQUISHED BY:		RELINQUISHED BY:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME:		DATE/TIME:	
Email Reports to (will default to PM if no other addresses are listed):				DATE/TIME:		DATE/TIME:	
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LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE to codes below	(refer	TOTAL CONTAINERS	S-8 TRH (C6-C40)/BTEXN/PAH/OC/PCB / 8 Metals	EA200N Asbestos (Presence /Absence)	Lead & TCLP Lead						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
44	SL21_0.1	2/07/2019	Soil	JAR		1			x						
45	SL22_0.1	2/07/2019	Soil	JAR		1			x						
46	SL23_0.1	2/07/2019	Soil	JAR		1	x	x							
47	SL23_0.5	2/07/2019	Soil	JAR		1	x	x							
48	SL24_0.1	2/07/2019	Soil	JAR		1	x	x							
49	SL24_0.5	2/07/2019	Soil	JAR		1	x	x							
50	SL25_0.1	2/07/2019	Soil	JAR		1	x	x							
51	SL25_0.5	2/07/2019	Soil	JAR		1	x	x							
52	SL26_0.1	2/07/2019	Soil	JAR		1	x	x							
53	SL26_0.5	2/07/2019	Soil	JAR		1	x	x							
54	SL27_0.1	2/07/2019	Soil	JAR		1	x	x							
55	SL27_0.5	2/07/2019	Soil	JAR		1	x	x							
56	SL28_0.1	2/07/2019	Soil	JAR		1	x	x							
57	SL28_0.5	2/07/2019	Soil	JAR		1	x	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 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.



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

BRISBANE 52 Shand Street St. Albans QLD 4053
Ph: 07 3243 7070 E: samples.brisbane@alsglobal.com

GLADSTONE 48 Callamandah Drive Clifton QLD 4680
Ph: 07 7471 5500 E: gladstone@alsglobal.com

ADLAIDE 21 Burma Road Port Adelaide SA 5015
Ph: 08 3559 0590 E: adelaide@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Watford Road Springvale VIC 3171
Ph: 01 8548 2800 E: samples.melbourne@alsglobal.com

MURDOCH 27 Sydney Road Mudgee NSW 2850
Ph: 02 9572 6705 E: mudgee@alsglobal.com

NEWCASTLE 6/86 Maitland Rd Mayfield NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOVA 4113 Geary Place North Nova NSW 2341
Ph: 02 4433 2080 E: nova@alsglobal.com

PERTH 10 Had Way Malaga WA 6090
Ph: 08 9206 7825 E: samples.perth@alsglobal.com

SYDNEY 277-286 Woodpark Road Smithfield NSW 2184
Ph: 02 8784 5555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Desma Court Beale QLD 4918
Ph: 07 4790 0800 E: townsville.environmental@alsglobal.com

WOLLONGONG 69 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkenbi@alsglobal.com

CLIENT: Cavvanba Consulting	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	<input type="checkbox"/> Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle) Custody Seal intact? Yes No N/A Free ice / frozen ice blocks present upon receipt? Yes No N/A Random Sample Temperature on Receipt: °C Other comment:
OFFICE: Byron Bay	<input checked="" type="checkbox"/> Non Standard or urgent TAT (List due date): 24 HR TAT		
PROJECT: 19038	ALS QUOTE NO.: SYBQ/409/18	COC SEQUENCE NUMBER (Circle)	
ORDER NUMBER: 19038		COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	
PROJECT MANAGER: [REDACTED]	CONTACT PH: [REDACTED]	RELINQUISHED BY: [REDACTED]	RELINQUISHED BY: [REDACTED]
SAMPLER: [REDACTED]	SAMPLER MOE: [REDACTED]	DATE/TIME: 03/07/2019	DATE/TIME: 4/7/19 2pm
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):		RECEIVED BY: [REDACTED]
Email Reports to (will default to PM if no other addresses are listed): glen@cavvanba.com, ross@cavvanba.com			DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION			ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).										Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE to codes below	(refer	TOTAL CONTAINERS	S-8 TRH (C6-C40)/BTEXN/PAH/OC/PCB/ 8 Metals	EA200N Asbestos (Presence/Absence)	S-18 TRH (C6-C10)/BTEX N								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
58	CS_01	1/07/2019	Concrete	JAR		1	x										
59	CS_02	1/07/2019	Concrete	JAR		1	x										
60	SS_01	2/07/2019	Sediment	JAR		1	x										
61	QS01	1/07/2019	Soil	JAR		1	x										
62	QS02	1/07/2019	Soil	JAR		1	Please forward analysis to Envirolab for TRH (C6-C40)/BTEXN/PAH/OC/PCB/ 8 Metals										
63	QS03	1/07/2019	Soil	JAR		1	x										
64	QS04	1/07/2019	Soil	JAR		1	Please forward analysis to Envirolab for TRH (C6-C40)/BTEXN/PAH/OC/PCB/ 8 Metals										
65	QS05	2/07/2019	Soil	JAR		1	x										
66	QS06	2/07/2019	Soil	JAR		1	Please forward analysis to Envirolab for TRH (C6-C40)/BTEXN/PAH/OC/PCB/ 8 Metals										
64	Trip Spike 6	1/7/19	Soil	JAR		1			x								
65	Trip Blank		Soil	JAR		1			x								
66	TSC 6	1/7/19	Soil	Jar		1											
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 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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES1920868

Client : **CAVVANBA CONSULTING**
 Contact : [REDACTED]
 Address : PO BOX 2191
 BYRON BAY NSW 2481

E-mail : [REDACTED]
 Telephone : [REDACTED]
 Facsimile : [REDACTED]

Project : ----
 Order number : 19038
 C-O-C number : ----
 Site : ----
 Sampler : [REDACTED]

Laboratory : Environmental Division Sydney
 Contact : [REDACTED]
 Address : 277-289 Woodpark Road Smithfield
 NSW Australia 2164

E-mail : [REDACTED]
 Telephone : +61 2 8784 8555
 Facsimile : +61-2-8784 8500

Page : 1 of 5
 Quote number : EB2017CAVCON0001 (SYBQ/409/18)
 QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 04-Jul-2019 14:00
 Client Requested Due : 05-Jul-2019
 Date

Issue Date : 05-Jul-2019
 Scheduled Reporting Date : **09-Jul-2019**

Delivery Details

Mode of Delivery : Undefined
 No. of coolers/boxes : 4
 Receipt Detail : ESKIES

Security Seal : Not Available
 Temperature : 5.4°C - Ice present
 No. of samples received / analysed : 66 / 54

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples QS02, QS04, QS06 forwarded to Envirolab as per COC.**
- **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.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **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	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EA200N Asbestos in Soils - (<1kg samples ONLY)	SOIL - EN33a TCLP Leachate	SOIL - EP075 (solids) Semivolatile Organic Compounds	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-08 TRH/BTEXN/PAH/OC/PCB/8 Metals
ES1920868-001	01-Jul-2019 00:00	SL01_0.1		✓	✓				✓
ES1920868-002	01-Jul-2019 00:00	SL01_0.5	✓						
ES1920868-003	01-Jul-2019 00:00	SL01_1.1		✓	✓				✓
ES1920868-004	01-Jul-2019 00:00	SL02_0.1		✓	✓				✓
ES1920868-005	01-Jul-2019 00:00	SL02_0.5	✓						
ES1920868-006	01-Jul-2019 00:00	SL02_1.1		✓	✓				✓
ES1920868-007	01-Jul-2019 00:00	SL02_1.2		✓	✓				✓
ES1920868-008	01-Jul-2019 00:00	SL03_0.1		✓	✓		✓		✓
ES1920868-009	01-Jul-2019 00:00	SL03_0.5		✓	✓				✓
ES1920868-010	01-Jul-2019 00:00	SL04_0.1		✓	✓				✓
ES1920868-011	01-Jul-2019 00:00	SL04_0.5	✓						
ES1920868-012	01-Jul-2019 00:00	SL05_0.1		✓	✓				✓
ES1920868-013	01-Jul-2019 00:00	SL05_0.5	✓						
ES1920868-014	01-Jul-2019 00:00	SL06_0.1		✓	✓				✓
ES1920868-015	01-Jul-2019 00:00	SL06_0.3	✓						
ES1920868-016	01-Jul-2019 00:00	SL07_0.1		✓	✓				✓
ES1920868-017	01-Jul-2019 00:00	SL07_0.3	✓						
ES1920868-018	01-Jul-2019 00:00	SL08_0.1		✓	✓				✓
ES1920868-019	01-Jul-2019 00:00	SL08_0.3	✓						
ES1920868-020	01-Jul-2019 00:00	SL09_0.1		✓	✓				✓
ES1920868-021	01-Jul-2019 00:00	SL09_0.3	✓						
ES1920868-022	01-Jul-2019 00:00	SL10_0.1		✓	✓				✓
ES1920868-023	01-Jul-2019 00:00	SL10_0.3	✓						
ES1920868-024	01-Jul-2019 00:00	SL11_0.1		✓	✓				✓
ES1920868-025	01-Jul-2019 00:00	SL11_0.3	✓						
ES1920868-026	01-Jul-2019 00:00	SL12_0.1		✓	✓				✓
ES1920868-027	01-Jul-2019 00:00	SL12_0.3	✓						
ES1920868-028	01-Jul-2019 00:00	SL13_0.1		✓	✓				✓
ES1920868-029	01-Jul-2019 00:00	SL13_0.5		✓	✓	✓		✓	✓
ES1920868-030	01-Jul-2019 00:00	SL13_1.0		✓	✓				✓
ES1920868-031	01-Jul-2019 00:00	SL14_0.1	✓						
ES1920868-032	01-Jul-2019 00:00	SL14_0.5		✓	✓	✓		✓	✓
ES1920868-033	01-Jul-2019 00:00	SL14_1.0		✓	✓				✓
ES1920868-034	01-Jul-2019 00:00	SL15_0.1		✓	✓				✓
ES1920868-035	01-Jul-2019 00:00	SL15_0.5		✓	✓	✓		✓	✓



			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EA200N Asbestos in Soils - (<1kg samples ONLY)	SOIL - EN33a TCLP Leachate	SOIL - EP075 (solids) Semivolatile Organic Compounds	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-08 TRH/BTEXN/PAH/OC/PCB/8 Metals
ES1920868-036	01-Jul-2019 00:00	SL16_0.1		✓	✓				✓
ES1920868-037	01-Jul-2019 00:00	SL16_0.5		✓	✓	✓		✓	✓
ES1920868-038	01-Jul-2019 00:00	SL17_0.1		✓	✓				✓
ES1920868-039	01-Jul-2019 00:00	SL17_0.5		✓	✓	✓		✓	✓
ES1920868-040	01-Jul-2019 00:00	SL18_0.1		✓	✓				✓
ES1920868-041	01-Jul-2019 00:00	SL18_0.5		✓	✓	✓		✓	✓
ES1920868-042	02-Jul-2019 00:00	SL19_0.1		✓		✓			
ES1920868-043	02-Jul-2019 00:00	SL20_0.1		✓		✓			
ES1920868-044	02-Jul-2019 00:00	SL21_0.1		✓		✓			
ES1920868-045	02-Jul-2019 00:00	SL22_0.1		✓		✓			
ES1920868-046	02-Jul-2019 00:00	SL23_0.1		✓	✓				✓
ES1920868-047	02-Jul-2019 00:00	SL23_0.5		✓	✓				✓
ES1920868-048	02-Jul-2019 00:00	SL24_0.1		✓	✓				✓
ES1920868-049	02-Jul-2019 00:00	SL24_0.5		✓	✓				✓
ES1920868-050	02-Jul-2019 00:00	SL25_0.1		✓	✓				✓
ES1920868-051	02-Jul-2019 00:00	SL25_0.5		✓	✓				✓
ES1920868-052	02-Jul-2019 00:00	SL26_0.1		✓	✓				✓
ES1920868-053	02-Jul-2019 00:00	SL26_0.5		✓	✓				✓
ES1920868-054	02-Jul-2019 00:00	SL27_0.1		✓	✓				✓
ES1920868-055	02-Jul-2019 00:00	SL27_0.5		✓	✓				✓
ES1920868-056	02-Jul-2019 00:00	SL28_0.1		✓	✓				✓
ES1920868-057	02-Jul-2019 00:00	SL28_0.5		✓	✓				✓
ES1920868-058	01-Jul-2019 00:00	CS_01		✓					✓
ES1920868-059	01-Jul-2019 00:00	CS_02		✓					✓
ES1920868-060	02-Jul-2019 00:00	SS_01		✓					✓
ES1920868-061	01-Jul-2019 00:00	QS01		✓					✓
ES1920868-062	01-Jul-2019 00:00	QS03		✓					✓
ES1920868-063	02-Jul-2019 00:00	QS05		✓					✓



Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - W-02L 8 metals (TCLP)
ES1920868-029	01-Jul-2019 00:00	SL13_0.5				✓
ES1920868-032	01-Jul-2019 00:00	SL14_0.5				✓
ES1920868-035	01-Jul-2019 00:00	SL15_0.5				✓
ES1920868-037	01-Jul-2019 00:00	SL16_0.5				✓
ES1920868-039	01-Jul-2019 00:00	SL17_0.5				✓
ES1920868-041	01-Jul-2019 00:00	SL18_0.5				✓
ES1920868-042	02-Jul-2019 00:00	SL19_0.1	✓	✓		
ES1920868-043	02-Jul-2019 00:00	SL20_0.1	✓	✓		
ES1920868-044	02-Jul-2019 00:00	SL21_0.1	✓	✓		
ES1920868-045	02-Jul-2019 00:00	SL22_0.1	✓	✓		
ES1920868-064	01-Jul-2019 00:00	Trip Spike 6			✓	
ES1920868-065	01-Jul-2019 00:00	Trip Blank			✓	
ES1920868-066	01-Jul-2019 00:00	TSC 6			✓	

Proactive Holding Time Report

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

ACCOUNTS PAYABLE

- Email inbox@cavvanba.com

- [illegible]

- [illegible]

- Email rob@cavvanba.com

- [illegible]

CERTIFICATE OF ANALYSIS 221112

Client Details

Client	Cavvanba
Attention	
Address	PO Box 2191, Byron Bay, NSW, 2481

Sample Details

Your Reference	<u>19038</u>
Number of Samples	3 SOIL
Date samples received	05/07/2019
Date completed instructions received	05/07/2019

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	08/07/2019
Date of Issue	08/07/2019
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

, Metals Supervisor
Supervisor

Authorised By

Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		221112-1	221112-2	221112-3
Your Reference	UNITS	QS02	QS04	QS06
Date Sampled		01/07/2019	01/07/2019	02/07/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	05/07/2019	05/07/2019	05/07/2019
Date analysed	-	06/07/2019	06/07/2019	06/07/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	80	84	84

svTRH (C10-C40) in Soil				
Our Reference		221112-1	221112-2	221112-3
Your Reference	UNITS	QS02	QS04	QS06
Date Sampled		01/07/2019	01/07/2019	02/07/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	05/07/2019	05/07/2019	05/07/2019
Date analysed	-	06/07/2019	06/07/2019	06/07/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50
Surrogate o-Terphenyl	%	88	89	88

PAHs in Soil				
Our Reference		221112-1	221112-2	221112-3
Your Reference	UNITS	QS02	QS04	QS06
Date Sampled		01/07/2019	01/07/2019	02/07/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	05/07/2019	05/07/2019	05/07/2019
Date analysed	-	05/07/2019	05/07/2019	05/07/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	101	105	106

Organochlorine Pesticides in soil				
Our Reference		221112-1	221112-2	221112-3
Your Reference	UNITS	QS02	QS04	QS06
Date Sampled		01/07/2019	01/07/2019	02/07/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	05/07/2019	05/07/2019	05/07/2019
Date analysed	-	05/07/2019	05/07/2019	05/07/2019
HCB	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	97	96	95

PCBs in Soil				
Our Reference		221112-1	221112-2	221112-3
Your Reference	UNITS	QS02	QS04	QS06
Date Sampled		01/07/2019	01/07/2019	02/07/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	05/07/2019	05/07/2019	05/07/2019
Date analysed	-	05/07/2019	05/07/2019	05/07/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	97	96	95

Acid Extractable metals in soil				
Our Reference		221112-1	221112-2	221112-3
Your Reference	UNITS	QS02	QS04	QS06
Date Sampled		01/07/2019	01/07/2019	02/07/2019
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	05/07/2019	05/07/2019	05/07/2019
Date analysed	-	08/07/2019	08/07/2019	08/07/2019
Arsenic	mg/kg	<4	7	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	17	14	9
Copper	mg/kg	16	54	25
Lead	mg/kg	11	10	6
Mercury	mg/kg	0.4	0.4	0.4
Nickel	mg/kg	9	6	9
Zinc	mg/kg	560	150	52

Moisture				
Our Reference		221112-1	221112-2	221112-3
Your Reference	UNITS	QS02	QS04	QS06
Date Sampled		01/07/2019	01/07/2019	02/07/2019
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	05/07/2019	05/07/2019	05/07/2019
Date analysed	-	08/07/2019	08/07/2019	08/07/2019
Moisture	%	38	31	28

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-003	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-003	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-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PCBs" is simply a sum of the positive individual PCBs.

Method ID	Methodology Summary
Org-012	<p>Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.</p> <p>For soil results:-</p> <ol style="list-style-type: none"> 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. <p>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.</p>
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	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)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	<p>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)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p> <p>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.</p>

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			05/07/2019	[NT]	[NT]	[NT]	[NT]	05/07/2019	[NT]
Date analysed	-			06/07/2019	[NT]	[NT]	[NT]	[NT]	06/07/2019	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	79	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	79	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	78	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	76	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	78	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	93	[NT]	[NT]	[NT]	[NT]	81	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			05/07/2019	[NT]	[NT]	[NT]	[NT]	05/07/2019	[NT]
Date analysed	-			05/07/2019	[NT]	[NT]	[NT]	[NT]	05/07/2019	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	85	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	85	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
Surrogate o-Terphenyl	%		Org-003	84	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			05/07/2019	[NT]	[NT]	[NT]	[NT]	05/07/2019	[NT]
Date analysed	-			05/07/2019	[NT]	[NT]	[NT]	[NT]	05/07/2019	[NT]
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	[NT]	[NT]	116	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	90	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			05/07/2019	[NT]	[NT]	[NT]	[NT]	05/07/2019	[NT]
Date analysed	-			05/07/2019	[NT]	[NT]	[NT]	[NT]	05/07/2019	[NT]
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	97	[NT]	[NT]	[NT]	[NT]	94	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			05/07/2019	[NT]	[NT]	[NT]	[NT]	05/07/2019	[NT]
Date analysed	-			05/07/2019	[NT]	[NT]	[NT]	[NT]	05/07/2019	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	119	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCLMX	%		Org-006	97	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date prepared	-			05/07/2019	[NT]	[NT]	[NT]	[NT]	05/07/2019	[NT]
Date analysed	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	109	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	103	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]

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.	

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; 60-140% for organics (+/-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.

SAMPLE RECEIPT ADVICE

Client Details

Client	Cavvanba
Attention	

Sample Login Details

Your reference	19038
Envirolab Reference	221112
Date Sample Received	05/07/2019
Date Instructions Received	05/07/2019
Date Results Expected to be Reported	08/07/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	3 SOIL
Turnaround Time Requested	1 day
Temperature on Receipt (°C)	12.7
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Phone:		Phone:	
Fax:		Fax:	
Email:		Email:	

Analysis Underway, details on the following page:



Envirolab Services Pty Ltd

ABN 37 112 535 645

12 Ashley St Chatswood NSW 2067

ph 02 9910 6200 fax 02 9910 6201

customerservice@envirolab.com.au

www.envirolab.com.au

Sample ID	VTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	PCBs in Soil	Acid Extractable metals in soil
QS02	✓	✓	✓	✓	✓	✓
QS04	✓	✓	✓	✓	✓	✓
QS06	✓	✓	✓	✓	✓	✓

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.

CERTIFICATE OF ANALYSIS

Work Order : **ES1921552**
Client : **CAVVANBA CONSULTING**
Contact : [REDACTED]
Address : PO BOX 2191
 BYRON BAY NSW 2481
Telephone : +61 02 6685 7811
Project : ----
Order number : 19038
C-O-C number : ----
Sampler : [REDACTED]
Site : ----
Quote number : SYBQ/409/18
No. of samples received : 7
No. of samples analysed : 6

Page : 1 of 7
Laboratory : Environmental Division Sydney
Contact : [REDACTED]
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61 2 8784 8555
Date Samples Received : 10-Jul-2019 19:51
Date Analysis Commenced : 11-Jul-2019
Issue Date : 16-Jul-2019 12:26



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
[REDACTED]		Sydney Inorganics, Smithfield, NSW
[REDACTED]	Organic Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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.
- 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.
- 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⁺).



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL02_0.1	SL02_0.5	SL11_0.1	SL11_0.3	SL13_0.5
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1921552-001	ES1921552-002	ES1921552-004	ES1921552-005	ES1921552-006
					Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		----	4.8	----	----	5.4
ED007: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g		----	5.2	----	----	4.0
Exchangeable Magnesium	----	0.1	meq/100g		----	0.3	----	----	1.0
Exchangeable Potassium	----	0.1	meq/100g		----	0.3	----	----	0.3
Exchangeable Sodium	----	0.1	meq/100g		----	0.3	----	----	0.5
Cation Exchange Capacity	----	0.1	meq/100g		----	6.4	----	----	6.0
Exchangeable Sodium Percent	----	0.1	%		----	5.6	----	----	8.1
EN33: TCLP Leach									
Initial pH	----	0.1	pH Unit		5.0	----	5.3	----	----
After HCl pH	----	0.1	pH Unit		1.6	----	1.6	----	----
Extraction Fluid Number	----	1	-		1	----	1	----	----
Final pH	----	0.1	pH Unit		5.0	----	10.7	----	----
EP004: Organic Matter									
Organic Matter	----	0.5	%		----	5.4	----	----	5.1
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		----	----	----	1.0	----
Pyrene	129-00-0	0.5	mg/kg		----	----	----	0.8	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	----	1.8	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	----	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL02_0.1	SL02_0.5	SL11_0.1	SL11_0.3	SL13_0.5
Client sampling date / time					01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1921552-001	ES1921552-002	ES1921552-004	ES1921552-005	ES1921552-006
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	----	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	----	1.2	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	----	87.0	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	----	83.9	----
2,4,6-Tribromophenol	118-79-6	0.5	%		----	----	----	72.3	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	----	103	----
Anthracene-d10	1719-06-8	0.5	%		----	----	----	97.7	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	----	102	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SL19_0.1	----	----	----	----
			Client sampling date / time	02-Jul-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1921552-007	-----	-----	-----	-----
Result				----	----	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	8.2	----	----	----	----
ED006: Exchangeable Cations on Alkaline Soils								
Exchangeable Calcium	----	0.2	meq/100g	4.5	----	----	----	----
Exchangeable Magnesium	----	0.2	meq/100g	<0.2	----	----	----	----
Exchangeable Potassium	----	0.2	meq/100g	0.3	----	----	----	----
Exchangeable Sodium	----	0.2	meq/100g	<0.2	----	----	----	----
Cation Exchange Capacity	----	0.2	meq/100g	4.8	----	----	----	----
Exchangeable Sodium Percent	----	0.2	%	<0.2	----	----	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	2.7	----	----	----	----



Analytical Results

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

Client sample ID

				SL02_0.1	SL11_0.1	----	----	----
Client sampling date / time				01-Jul-2019 00:00	01-Jul-2019 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1921552-001	ES1921552-004	-----	-----	-----
				Result	Result	----	----	----
EG005(ED093)C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	<0.1	----	----	----	----
Cadmium	7440-43-9	0.05	mg/L	0.10	----	----	----	----
Chromium	7440-47-3	0.1	mg/L	<0.1	----	----	----	----
Copper	7440-50-8	0.1	mg/L	14.5	----	----	----	----
Lead	7439-92-1	0.1	mg/L	0.2	----	----	----	----
Nickel	7440-02-0	0.1	mg/L	<0.1	----	----	----	----
Zinc	7440-66-6	0.1	mg/L	23.8	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	----	19.8	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	----	39.3	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	----	36.6	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	----	84.6	----	----	----
Anthracene-d10	1719-06-8	1.0	%	----	77.3	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	----	88.1	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
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

Sub-Matrix: TCLP LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112

QUALITY CONTROL REPORT

Work Order	: ES1921552	Page	: 1 of 6
Client	: CAVVANBA CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: PO BOX 2191 BYRON BAY NSW 2481	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [REDACTED]	Telephone	: [REDACTED]
Project	: ----	Date Samples Received	: 10-Jul-2019
Order number	: 19038	Date Analysis Commenced	: 11-Jul-2019
C-O-C number	: ----	Issue Date	: 16-Jul-2019
Sampler	: [REDACTED]		
Site	: ----		
Quote number	: SYBQ/409/18		
No. of samples received	: 7		
No. of samples analysed	: 6		



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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
[REDACTED]		Sydney Inorganics, Smithfield, NSW
[REDACTED]	Organic Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA002: pH 1:5 (Soils) (QC Lot: 2459093)									
ES1920702-004	Anonymous	EA002: pH Value	----	0.1	pH Unit	6.6	6.7	0.00	0% - 20%
ES1921255-004	Anonymous	EA002: pH Value	----	0.1	pH Unit	7.8	7.9	0.00	0% - 20%
EA002: pH 1:5 (Soils) (QC Lot: 2459097)									
ES1921552-007	SL19_0.1	EA002: pH Value	----	0.1	pH Unit	8.2	8.2	0.00	0% - 20%
ED006: Exchangeable Cations on Alkaline Soils (QC Lot: 2465504)									
ES1921552-007	SL19_0.1	ED006: Exchangeable Sodium Percent	----	0.2	%	<0.2	<0.2	0.00	No Limit
		ED006: Exchangeable Calcium	----	0.2	meq/100g	4.5	4.2	5.01	0% - 20%
		ED006: Exchangeable Magnesium	----	0.2	meq/100g	<0.2	<0.2	0.00	No Limit
		ED006: Exchangeable Potassium	----	0.2	meq/100g	0.3	0.3	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	4.8	4.6	4.99	0% - 20%
ED007: Exchangeable Cations (QC Lot: 2465506)									
ES1920711-001	Anonymous	ED007: Exchangeable Sodium Percent	----	0.1	%	0.1	<0.1	0.00	No Limit
		ED007: Exchangeable Calcium	----	0.1	meq/100g	8.0	7.8	1.58	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	3.2	3.2	0.00	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	1.5	1.4	0.00	0% - 50%
		ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.00	No Limit
		ED007: Cation Exchange Capacity	----	0.1	meq/100g	12.6	12.4	1.76	0% - 20%
EP004: Organic Matter (QC Lot: 2459327)									
ES1921552-002	SL02_0.5	EP004: Organic Matter	----	0.5	%	5.4	4.8	12.5	0% - 50%
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2460145)									
ES1920560-002	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



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2460145) - continued									
ES1920560-002	Anonymous	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	1.0	0.9	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.9	1.0	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): Dibenzo(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	1.9	1.9	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)C: Leachable Metals by ICPAES (QC Lot: 2464533)									
ES1921125-001	Anonymous	EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Zinc	7440-66-6	0.1	mg/L	0.1	0.1	0.00	No Limit
ES1921707-001	Anonymous	EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	0.1	0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Zinc	7440-66-6	0.1	mg/L	0.3	0.3	0.00	No Limit



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

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

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
ED006: Exchangeable Cations on Alkaline Soils (QCLot: 2465504)								
ED006: Exchangeable Calcium	----	0.2	meq/100g	<0.2	2.5 meq/100g	107	80	110
ED006: Exchangeable Magnesium	----	0.2	meq/100g	<0.2	4.17 meq/100g	94.0	80	110
ED006: Exchangeable Potassium	----	0.2	meq/100g	<0.2	1.28 meq/100g	96.9	80	110
ED006: Exchangeable Sodium	----	0.2	meq/100g	<0.2	2.17 meq/100g	93.0	80	110
ED006: Cation Exchange Capacity	----	0.2	meq/100g	<0.2	----	----	----	----
ED006: Exchangeable Sodium Percent	----	0.2	%	<0.2	----	----	----	----
ED007: Exchangeable Cations (QCLot: 2465506)								
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	1 meq/100g	95.0	76	120
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	1.67 meq/100g	91.4	75	115
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	0.51 meq/100g	98.9	80	120
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.87 meq/100g	98.8	80	120
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	----	----	----	----
ED007: Exchangeable Sodium Percent	----	0.1	%	<0.1	----	----	----	----
EN33: TCLP Leach (QCLot: 2459092)								
EN33a: Initial pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: After HCl pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: Final pH	----	0.1	pH Unit	1.0	----	----	----	----
EP004: Organic Matter (QCLot: 2459327)								
EP004: Organic Matter	----	0.5	%	<0.5	2.53 %	87.0	82	98
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2460145)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	91.5	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	95.4	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	91.9	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	93.0	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	98.1	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	91.0	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	96.7	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	93.2	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	92.6	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	93.8	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	90.9	68	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	91.5	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	95.8	70	126



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit			LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2460145) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	80.6	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	83.5	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	84.1	63	121

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2464533)								
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	0.1 mg/L	114	80	124
EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	0.1 mg/L	103	80	118
EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	0.1 mg/L	100	88	114
EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	0.1 mg/L	100.0	86	114
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	0.1 mg/L	99.1	80	118
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	0.1 mg/L	95.1	83	115
EG005C: Zinc	7440-66-6	0.1	mg/L	<0.1	0.1 mg/L	95.1	79	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2463065)								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	85.0	63	117

Matrix Spike (MS) Report

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

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP004: Organic Matter (QCLot: 2459327)							
ES1921552-002	SL02_0.5	EP004: Organic Matter	----	0.98 %	# Not Determined	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2460145)							
ES1920560-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	97.4	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.6	70	130
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2464533)							
ES1921257-001	Anonymous	EG005C: Arsenic	7440-38-2	1 mg/L	117	70	130
		EG005C: Cadmium	7440-43-9	0.25 mg/L	110	70	130
		EG005C: Chromium	7440-47-3	1 mg/L	108	70	130



Sub-Matrix: WATER

Laboratory sample IDClient sample IDMethod: CompoundCAS Number				Matrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery Limits (%)
				Concentration	MS	LowHigh
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2464533) - continued						
ES1921257-001	Anonymous	EG005C: Copper	7440-50-8	1 mg/L	108	70130
		EG005C: Lead	7439-92-1	1 mg/L	110	70130
		EG005C: Nickel	7440-02-0	1 mg/L	108	70130
		EG005C: Zinc	7440-66-6	1 mg/L	112	70130

QA/QC Compliance Assessment to assist with Quality Review

Work Order : ES1921552

Page : 1 of 6

Client : CAVVANBA CONSULTING

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Telephone : [REDACTED]

Project : ----

Date Samples Received : 10-Jul-2019

Site : ----

Issue Date : 16-Jul-2019

Sampler : [REDACTED]

No. of samples received : 7

Order number : 19038

No. of samples analysed : 6

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP004: Organic Matter	ES1921552--002	SL02_0.5	Organic Matter	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

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 SL02_0.5, SL13_0.5		11-Jul-2019	08-Jul-2019	3	----	----	----
Soil Glass Jar - Unpreserved SL19_0.1		11-Jul-2019	09-Jul-2019	2	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	7	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	7	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	Evaluation
EA002: pH 1:5 (Soils)							
Soil Glass Jar - Unpreserved (EA002) SL02_0.5, SL13_0.5	01-Jul-2019	11-Jul-2019	08-Jul-2019	✖	11-Jul-2019	11-Jul-2019	✔
Soil Glass Jar - Unpreserved (EA002) SL19_0.1	02-Jul-2019	11-Jul-2019	09-Jul-2019	✖	11-Jul-2019	11-Jul-2019	✔



Matrix: **SOIL**

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

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED006: Exchangeable Cations on Alkaline Soils							
Soil Glass Jar - Unpreserved (ED006) SL19_0.1	02-Jul-2019	15-Jul-2019	30-Jul-2019	✓	15-Jul-2019	30-Jul-2019	✓
ED007: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED007) SL02_0.5, SL13_0.5	01-Jul-2019	15-Jul-2019	29-Jul-2019	✓	15-Jul-2019	29-Jul-2019	✓
EN33: TCLP Leach							
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN33a) SL11_0.1	01-Jul-2019	11-Jul-2019	15-Jul-2019	✓	----	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN33a) SL02_0.1	01-Jul-2019	11-Jul-2019	28-Dec-2019	✓	----	----	----
EP004: Organic Matter							
Soil Glass Jar - Unpreserved (EP004) SL02_0.5, SL13_0.5	01-Jul-2019	12-Jul-2019	29-Jul-2019	✓	12-Jul-2019	29-Jul-2019	✓
Soil Glass Jar - Unpreserved (EP004) SL19_0.1	02-Jul-2019	12-Jul-2019	30-Jul-2019	✓	12-Jul-2019	30-Jul-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) SL11_0.3	01-Jul-2019	11-Jul-2019	15-Jul-2019	✓	12-Jul-2019	20-Aug-2019	✓

Matrix: **WATER**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) SL02_0.1		11-Jul-2019	15-Jul-2019	07-Jan-2020	✓	15-Jul-2019	07-Jan-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) SL11_0.1		11-Jul-2019	13-Jul-2019	18-Jul-2019	✓	15-Jul-2019	22-Aug-2019	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Exchangeable Cations	ED007	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations on Alkaline Soils	ED006	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	3	21	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Exchangeable Cations	ED007	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations on Alkaline Soils	ED006	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Exchangeable Cations	ED007	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations on Alkaline Soils	ED006	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Organic Matter	EP004	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TCLP for Non & Semivolatile Analytes	EN33a	1	10	10.00	9.09	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Organic Matter	EP004	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	7	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	7	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH (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 (2013) Schedule B(3)
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.
Exchangeable Cations	ED007	SOIL	In house: Referenced to Rayment & Lyons (2011) Method 15A1. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 301)
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
Organic Matter	EP004	SOIL	In house: Referenced to AS1289.4.1.1 - 1997. Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)

Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method (Alkaline Soils)	ED006PR	SOIL	In house: Referenced to Rayment and Lyons 2011 method 15C1.
Exchangeable Cations Preparation Method	ED007PR	SOIL	In house: Referenced to Rayment & Higginson (1992) 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.
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
TCLP for Non & Semivolatile Analytes	EN33a	SOIL	In house QWI-EN/33 referenced to USEPA SW846-1311: The TCLP procedure is designed to determine the mobility of both organic and inorganic analytes present in wastes. The standard TCLP leach is for non-volatile and Semivolatile test parameters.
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.
Organic Matter	EP004-PR	SOIL	In house: Referenced to AS1289.4.1.1 - 1997. Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3) (Method 105)
Separatory Funnel Extraction of Liquids	ORG14	SOIL	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.

Page : 6 of 6
Work Order : ES1921552
Client : CAVVANBA CONSULTING
Project : ----



Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES1921552

Client : **CAVVANBA CONSULTING**
 Contact : [REDACTED]
 Address : PO BOX 2191
 BYRON BAY NSW 2481

E-mail : [REDACTED]
 Telephone : [REDACTED]
 Facsimile : [REDACTED]

Project : ----
 Order number : 19038
 C-O-C number : ----
 Site : ----
 Sampler : [REDACTED]

Laboratory : Environmental Division Sydney
 Contact : [REDACTED]
 Address : 277-289 Woodpark Road Smithfield
 NSW Australia 2164

E-mail : [REDACTED]
 Telephone : [REDACTED]
 Facsimile : [REDACTED]

Page : 1 of 3
 Quote number : EB2017CAVCON0001 (SYBQ/409/18)
 QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 10-Jul-2019 19:51
 Client Requested Due : 11-Jul-2019
 Date

Issue Date : 16-Jul-2019
 Scheduled Reporting Date : **12-Jul-2019**

Delivery Details

Mode of Delivery : Sampled By ALS
 No. of coolers/boxes : ----
 Receipt Detail :

Security Seal : Not Available
 Temperature : 4.1°C
 No. of samples received / analysed : 7 / 6

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
- **Rebatch from ES1920868**
- **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.**
- Please note that the scheduled reporting date has not been confirmed with laboratory management. If the scheduled reporting date is not achievable ALS will be in contact with you.
- 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	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA002 pH (1:5)	SOIL - ED007 Def CEC / Exchangeable Cations (ED007) - Default	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN33a TCLP Leachate	SOIL - EP004 Organic Matter in Soil (Walkley Black)	SOIL - EP075 SIM PAH only SIM - PAH only
ES1921552-001	01-Jul-2019 00:00	SL02_0.1				✓	✓		
ES1921552-002	01-Jul-2019 00:00	SL02_0.5		✓	✓			✓	
ES1921552-003	01-Jul-2019 00:00	SL08_0.3	✓						
ES1921552-004	01-Jul-2019 00:00	SL11_0.1					✓		✓
ES1921552-005	01-Jul-2019 00:00	SL11_0.3							✓
ES1921552-006	01-Jul-2019 00:00	SL13_0.5		✓	✓			✓	
ES1921552-007	02-Jul-2019 00:00	SL19_0.1		✓				✓	

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - ED006 Def Exchangeable Cations on Alkaline Soils - Default
ES1921552-005	01-Jul-2019 00:00	SL11_0.3	✓	
ES1921552-007	02-Jul-2019 00:00	SL19_0.1		✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

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

Method	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
Client Sample ID(s)							
EA002: pH (1:5)							
SL02_0.5	Soil Glass Jar - Unpreserved	08-Jul-2019	11-Jul-2019	10-Jul-2019	✗	----	----
SL13_0.5	Soil Glass Jar - Unpreserved	08-Jul-2019	11-Jul-2019	10-Jul-2019	✗	----	----
SL19_0.1	Soil Glass Jar - Unpreserved	09-Jul-2019	11-Jul-2019	10-Jul-2019	✗	----	----



Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email inbox@cavvanba.com

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email

Email

Email

Email

Email

Email

Email

CERTIFICATE OF ANALYSIS

Work Order : **ES1922153**
Client : **CAVVANBA CONSULTING**
Contact : [REDACTED]
Address : PO BOX 2191
 BYRON BAY NSW 2481
Telephone : [REDACTED]
Project : 19038
Order number : 19038
C-O-C number : ----
Sampler : [REDACTED]
Site : ----
Quote number : SYBQ/409/18
No. of samples received : 14
No. of samples analysed : 8

Page : 1 of 5
Laboratory : Environmental Division Sydney
Contact : [REDACTED]
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : [REDACTED]
Date Samples Received : 16-Jul-2019 15:00
Date Analysis Commenced : 16-Jul-2019
Issue Date : 17-Jul-2019 13:06



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	Organic Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL29_0.1	SL29_0.3	SL31_0.1	SL31_0.3	SL33_0.1
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1922153-001	ES1922153-002	ES1922153-005	ES1922153-006	ES1922153-009
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		25.7	26.9	30.4	28.7	27.9
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
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	1.0	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	0.8	<0.5	<0.5
Benz(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	2.3	<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
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		89.0	88.5	89.4	86.8	86.8
2-Chlorophenol-D4	93951-73-6	0.5	%		91.6	90.8	92.7	89.1	88.4
2,4,6-Tribromophenol	118-79-6	0.5	%		65.1	73.4	74.6	69.4	72.0
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		106	103	104	100	100
Anthracene-d10	1719-06-8	0.5	%		93.2	93.1	94.6	91.9	92.0
4-Terphenyl-d14	1718-51-0	0.5	%		121	118	121	117	117



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SL33_0.3	QS07	QS08	----	----
Client sampling date / time					11-Jul-2019 00:00	11-Jul-2019 00:00	11-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1922153-010	ES1922153-013	ES1922153-014	-----	-----
					Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		26.8	27.1	28.6	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ 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	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		87.3	89.6	85.4	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		89.6	91.3	86.6	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		78.3	78.1	73.9	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		101	104	97.9	----	----
Anthracene-d10	1719-06-8	0.5	%		92.6	94.6	89.6	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		118	120	114	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
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

QUALITY CONTROL REPORT

Work Order	: ES1922153	Page	: 1 of 3
Client	: CAVVANBA CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: PO BOX 2191 BYRON BAY NSW 2481	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [REDACTED]	Telephone	: [REDACTED]
Project	: 19038	Date Samples Received	: 16-Jul-2019
Order number	: 19038	Date Analysis Commenced	: 16-Jul-2019
C-O-C number	: ----	Issue Date	: 17-Jul-2019
Sampler	: [REDACTED]		
Site	: ----		
Quote number	: SYBQ/409/18		
No. of samples received	: 14		
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. 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
[REDACTED]	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	Organic Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2468858)									
EM1911140-003	Anonymous	EA055: Moisture Content	----	0.1	%	25.5	25.8	1.41	0% - 20%
ES1922153-009	SL33_0.1	EA055: Moisture Content	----	0.1	%	27.9	27.4	1.71	0% - 20%
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2468957)									
ES1922153-001	SL29_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						
		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): Dibenzo(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



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

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

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2468957)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	87.3	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	77.5	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	87.4	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	83.7	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	90.3	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	78.6	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	87.5	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	87.7	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	93.4	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	93.5	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	99.6	68	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	102	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	78.0	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	77.1	61	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	72.1	62	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	77.9	63	121

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2468957)							
ES1922153-001	SL29_0.1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	78.2	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	78.4	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order : ES1922153

Page : 1 of 4

Client : CAVVANBA CONSULTING

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Telephone : [REDACTED]

Project : 19038

Date Samples Received : 16-Jul-2019

Site : ----

Issue Date : 17-Jul-2019

Sampler : [REDACTED]

No. of samples received : 14

Order number : 19038

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

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

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.

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

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

Matrix: SOIL

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

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
SL29_0.1, SL31_0.1, SL33_0.1, QS07,	SL29_0.3, SL31_0.3, SL33_0.3, QS08	11-Jul-2019	----	----	----	16-Jul-2019	25-Jul-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
SL29_0.1, SL31_0.1, SL33_0.1, QS07,	SL29_0.3, SL31_0.3, SL33_0.3, QS08	11-Jul-2019	16-Jul-2019	25-Jul-2019	✓	17-Jul-2019	25-Aug-2019	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	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 (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES1922153

Client : **CAVVANBA CONSULTING**
 Contact : [REDACTED]
 Address : PO BOX 2191
 BYRON BAY NSW 2481

E-mail : [REDACTED]
 Telephone : [REDACTED]
 Facsimile : +61 02 6685 5083

Project : 19038
 Order number : 19038
 C-O-C number : ----
 Site : ----
 Sampler : [REDACTED]

Laboratory : Environmental Division Sydney
 Contact : [REDACTED]
 Address : 277-289 Woodpark Road Smithfield
 NSW Australia 2164

E-mail : [REDACTED].com
 Telephone : [REDACTED]
 Facsimile : +61-2-8784 8500

Page : 1 of 3
 Quote number : EB2017CAVCON0001 (SYBQ/409/18)
 QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 16-Jul-2019 15:00
 Client Requested Due : 17-Jul-2019
 Date

Issue Date : 16-Jul-2019
 Scheduled Reporting Date : **17-Jul-2019**

Delivery Details

Mode of Delivery : Carrier
 No. of coolers/boxes : 1
 Receipt Detail :

Security Seal : Not Available
 Temperature : 15.2°C
 No. of samples received / analysed : 14 / 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 absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- 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	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP075 SIM PAH only SIM - PAH only
ES1922153-001	11-Jul-2019 00:00	SL29_0.1		✓	✓
ES1922153-002	11-Jul-2019 00:00	SL29_0.3		✓	✓
ES1922153-003	11-Jul-2019 00:00	SL30_0.1	✓		
ES1922153-004	11-Jul-2019 00:00	SL30_0.3	✓		
ES1922153-005	11-Jul-2019 00:00	SL31_0.1		✓	✓
ES1922153-006	11-Jul-2019 00:00	SL31_0.3		✓	✓
ES1922153-007	11-Jul-2019 00:00	SL32_0.1	✓		
ES1922153-008	11-Jul-2019 00:00	SL32_0.3	✓		
ES1922153-009	11-Jul-2019 00:00	SL33_0.1		✓	✓
ES1922153-010	11-Jul-2019 00:00	SL33_0.3		✓	✓
ES1922153-011	11-Jul-2019 00:00	SL34_0.1	✓		
ES1922153-012	11-Jul-2019 00:00	SL34_0.3	✓		
ES1922153-013	11-Jul-2019 00:00	QS07		✓	✓
ES1922153-014	11-Jul-2019 00:00	QS08		✓	✓

Proactive Holding Time Report

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

ACCOUNTS PAYABLE

- Email inbox@cavvanba.com

- [illegible]

- Email rob@cavvanba.com

- [illegible]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES1922153

Client : **CAVVANBA CONSULTING**
 Contact : [REDACTED]
 Address : PO BOX 2191
 BYRON BAY NSW 2481

Laboratory : Environmental Division Sydney
 Contact : [REDACTED]
 Address : 277-289 Woodpark Road Smithfield
 NSW Australia 2164

E-mail : [REDACTED]com
 Telephone : [REDACTED]
 Facsimile : [REDACTED]

E-mail : [REDACTED]
 Telephone : [REDACTED]
 Facsimile : [REDACTED]
 Page : 1 of 3
 Quote number : EB2017CAVCON0001 (SYBQ/409/18)
 QC Level : NEPM 2013 B3 & ALS QC Standard

Project : 19038
 Order number : 19038
 C-O-C number : ----
 Site : ----
 Sampler : [REDACTED]

Dates

Date Samples Received : 16-Jul-2019 15:00
 Client Requested Due : 17-Jul-2019
 Date

Issue Date : 16-Jul-2019
 Scheduled Reporting Date : **17-Jul-2019**

Delivery Details

Mode of Delivery : Carrier
 No. of coolers/boxes : 1
 Receipt Detail :

Security Seal : Not Available
 Temperature : 15.2°C
 No. of samples received / analysed : 14 / 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 absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
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- Analytical work for this work order will be conducted at ALS Sydney.
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- 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	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP075 SIM PAH only SIM - PAH only
ES1922153-001	11-Jul-2019 00:00	SL29_0.1		✓	✓
ES1922153-002	11-Jul-2019 00:00	SL29_0.3		✓	✓
ES1922153-003	11-Jul-2019 00:00	SL30_0.1	✓		
ES1922153-004	11-Jul-2019 00:00	SL30_0.3	✓		
ES1922153-005	11-Jul-2019 00:00	SL31_0.1		✓	✓
ES1922153-006	11-Jul-2019 00:00	SL31_0.3		✓	✓
ES1922153-007	11-Jul-2019 00:00	SL32_0.1	✓		
ES1922153-008	11-Jul-2019 00:00	SL32_0.3	✓		
ES1922153-009	11-Jul-2019 00:00	SL33_0.1		✓	✓
ES1922153-010	11-Jul-2019 00:00	SL33_0.3		✓	✓
ES1922153-011	11-Jul-2019 00:00	SL34_0.1	✓		
ES1922153-012	11-Jul-2019 00:00	SL34_0.3	✓		
ES1922153-013	11-Jul-2019 00:00	QS07		✓	✓
ES1922153-014	11-Jul-2019 00:00	QS08		✓	✓

Proactive Holding Time Report

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

ACCOUNTS PAYABLE

Email inbox@cavvanba.com

Email qlen@cavvanba.com

Email glen@cavvanba.com

Email qlen@cavvanba.com

Email glen@cavvanba.com

Email glen@cavvanba.com

Email qlen@cavvanba.com

Email glen@cavvanba.com

Email rob@cavvanba.com

Email ross@cavvanba.com

Email ross@cavvanba.com

Email ross@cavvanba.com

Email ross@cavvanba.com

Email ross@cavvanba.com

Email ross@cavvanba.com

Email ross@cavvanba.com

CERTIFICATE OF ANALYSIS

Work Order : **ES1920749**

Amendment : **1**

Client : **CAVVANBA CONSULTING**

Contact : [REDACTED]

Address : PO BOX 2191
BYRON BAY NSW 2481

Telephone : [REDACTED]

Project : 19038

Order number : 19038

C-O-C number : ----

Sampler : [REDACTED]

Site : ----

Quote number : SYBQ/409/18

No. of samples received : 5

No. of samples analysed : 5

Page : 1 of 6

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : [REDACTED]

Date Samples Received : 04-Jul-2019 13:45

Date Analysis Commenced : 05-Jul-2019

Issue Date : 12-Jul-2019 11:42



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories

Position

Accreditation Category

[REDACTED]
[REDACTED]

Organic Coordinator
Analyst

Sydney Organics, Smithfield, NSW
Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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.
- EG020: Cadmium and Lead results for samples ES1920749-#001 and #003 confirmed by re-digestion and reanalysis.
- Amendment (10/07/2019): This report has been amended and re-released to allow the reporting of additional analytical data.
- EP068: Particular samples required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- EP075(SIM): Particular sample required dilution due to sample matrix interferences. LOR values have been adjusted accordingly.
- EP066 : Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				SW-DIP	SW_DAM	QW01	Trip Spike	Trip Blank
Client sampling date / time				01-Jul-2019 00:00	02-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920749-001	ES1920749-002	ES1920749-003	ES1920749-004	ES1920749-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.004	<0.001	0.003	----	----
Cadmium	7440-43-9	0.0001	mg/L	0.0033	<0.0001	0.0021	----	----
Chromium	7440-47-3	0.001	mg/L	0.005	<0.001	0.002	----	----
Copper	7440-50-8	0.001	mg/L	1.23	<0.001	1.01	----	----
Nickel	7440-02-0	0.001	mg/L	0.007	0.005	0.006	----	----
Lead	7439-92-1	0.001	mg/L	0.022	<0.001	0.016	----	----
Zinc	7440-66-6	0.005	mg/L	4.82	0.018	4.06	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<2	<1	<1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<2.4	<0.5	<2.4	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<2.4	<0.5	<2.4	----	----
beta-BHC	319-85-7	0.5	µg/L	<2.4	<0.5	<2.4	----	----
gamma-BHC	58-89-9	0.5	µg/L	<2.4	<0.5	<2.4	----	----
delta-BHC	319-86-8	0.5	µg/L	<2.4	<0.5	<2.4	----	----
Heptachlor	76-44-8	0.5	µg/L	<2.4	<0.5	<2.4	----	----
Aldrin	309-00-2	0.5	µg/L	<2.4	<0.5	<2.4	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<2.4	<0.5	<2.4	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<2.4	<0.5	<2.4	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<2.4	<0.5	<2.4	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<2.4	<0.5	<2.4	----	----
Dieldrin	60-57-1	0.5	µg/L	<2.4	<0.5	<2.4	----	----
4,4'-DDE	72-55-9	0.5	µg/L	<2.4	<0.5	<2.4	----	----
Endrin	72-20-8	0.5	µg/L	<2.4	<0.5	<2.4	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<2.4	<0.5	<2.4	----	----
4,4'-DDD	72-54-8	0.5	µg/L	<2.4	<0.5	<2.4	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<2.4	<0.5	<2.4	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<2.4	<0.5	<2.4	----	----
4,4'-DDT	50-29-3	2.0	µg/L	<9.6	<2.0	<9.6	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<2.4	<0.5	<2.4	----	----
Methoxychlor	72-43-5	2.0	µg/L	<9.6	<2.0	<9.6	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.8	<0.5	<0.8	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				SW-DIP	SW_DAM	QW01	Trip Spike	Trip Blank
Client sampling date / time				01-Jul-2019 00:00	02-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920749-001	ES1920749-002	ES1920749-003	ES1920749-004	ES1920749-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.8	<0.5	<0.8	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.8	<0.5	<0.8	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	6.7	<1.0	45.5	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<9.4	----	----
Acenaphthene	83-32-9	1.0	µg/L	1190	<1.0	<9.4	----	----
Fluorene	86-73-7	1.0	µg/L	2.6	<1.0	<9.4	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	14.3	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<9.4	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<9.4	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<9.4	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<9.4	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<9.4	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<9.4	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<9.4	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<9.4	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<9.4	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<9.4	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<9.4	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	1200	<0.5	59.8	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<4.7	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	140	<20	130	190	<20
C10 - C14 Fraction	----	50	µg/L	3780	<50	3750	----	----
C15 - C28 Fraction	----	100	µg/L	32300	<100	9750	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	36100	<50	13600	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	140	<20	140	200	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	140	<20	140	120	<20
>C10 - C16 Fraction	----	100	µg/L	6620	<100	6110	----	----
>C16 - C34 Fraction	----	100	µg/L	28200	<100	7200	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				SW-DIP	SW_DAM	QW01	Trip Spike	Trip Blank
Client sampling date / time				01-Jul-2019 00:00	02-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00	01-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1920749-001	ES1920749-002	ES1920749-003	ES1920749-004	ES1920749-005
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C40 Fraction (sum)	----	100	µg/L	34800	<100	13300	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	6620	<100	6110	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	17	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	18	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	16	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	15	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	15	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	30	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	81	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	17	<5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	77.6	92.0	89.7	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.5	%	90.5	96.2	71.7	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.5	%	75.2	81.8	69.2	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	27.7	27.5	29.1	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	64.6	65.4	67.0	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	56.3	76.7	75.8	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	98.8	91.3	103	----	----
Anthracene-d10	1719-06-8	1.0	%	84.3	89.4	100	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	76.9	90.5	109	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	113	79.5	114	104	83.0
Toluene-D8	2037-26-5	2	%	120	79.2	122	122	95.4
4-Bromofluorobenzene	460-00-4	2	%	110	77.9	108	90.1	81.6



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	29	129
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order : **ES1920749**

Page : 1 of 7

Amendment : **1**

Client : **CAVVANBA CONSULTING**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : PO BOX 2191
BYRON BAY NSW 2481

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : [REDACTED]

Telephone : [REDACTED]

Project : 19038

Date Samples Received : 04-Jul-2019

Order number : 19038

Date Analysis Commenced : 05-Jul-2019

C-O-C number : ----

Issue Date : 12-Jul-2019

Sampler : [REDACTED]

Site : ----

Quote number : SYBQ/409/18

No. of samples received : 5

No. of samples analysed : 5



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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories

Position

Accreditation Category

[REDACTED]

Organic Coordinator

Sydney Organics, Smithfield, NSW

[REDACTED]

Analyst

Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 2447182)									
ES1920232-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0004	0.0004	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	0.010	0.010	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.253	0.251	0.576	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.012	0.012	0.00	0% - 50%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.010	0.010	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.478	0.465	2.86	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2447195)									
ES1920264-014	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2448983)									
ES1920675-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2448983)									
ES1920675-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2448983)									
ES1920675-001	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	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



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

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

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 2447182)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.8	82	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	102	84	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.7	86	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.8	83	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.3	85	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.1	84	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	93.8	79	117
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2447195)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.7	77	111
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2447842)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	89.0	62	107
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2457449)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	104	62	107
EP068A: Organochlorine Pesticides (OC) (QCLot: 2447841)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	80.5	65	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	79.0	58	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	77.8	69	117
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	85.3	70	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	83.6	69	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	106	65	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	100	66	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	99.0	67	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	103	64	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	81.7	67	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	77.5	63	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	107	65	113
EP068: 4,4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	80.2	66	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	81.1	65	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	82.8	67	114
EP068: 4,4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	81.6	72	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	89.2	67	109
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	83.5	65	112
EP068: 4,4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	106	65	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	77.3	64	110



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068A: Organochlorine Pesticides (OC) (QCLot: 2447841) - continued								
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	77.3	61	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 2457448)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	86.3	65	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	84.3	58	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	83.3	69	117
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	89.3	70	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	81.5	69	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	99.9	65	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	96.8	66	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	88.0	67	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	81.2	64	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	85.5	67	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	76.2	63	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	92.4	65	113
EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	84.9	66	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	88.2	65	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	96.2	67	114
EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	95.6	72	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	99.3	67	109
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	81.3	65	112
EP068: 4,4'-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	93.8	65	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	88.3	64	110
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	81.6	61	114
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2447839)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	71.4	50	94
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	68.6	64	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	70.3	62	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	70.0	64	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	88.0	63	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	65.7	64	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	76.9	64	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	77.8	63	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	78.4	64	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	70.3	63	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	82.2	62	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	73.7	63	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	75.6	63	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	75.3	60	118



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2447839) - continued								
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	80.8	61	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	84.0	59	118
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2457446)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	65.4	50	94
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	75.2	64	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	69.4	62	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	83.6	64	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	85.1	63	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	67.3	64	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	91.2	64	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	89.1	63	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	96.4	64	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	92.2	63	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	82.1	62	119
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	78.3	63	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	92.7	63	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	97.2	60	118
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	97.1	61	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	99.9	59	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2447840)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	57.2	56	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	85.8	72	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	76.6	56	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2448983)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	80.4	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2457447)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	60.0	56	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	83.5	72	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	72.7	56	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2447840)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	73.6	58	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	64.9	63	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	76.6	62	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2448983)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	82.2	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2457447)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	67.5	58	119



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2457447) - continued								
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	71.3	63	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	83.7	62	121
EP080: BTEXN (QCLot: 2448983)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	97.8	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	93.9	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.1	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	94.4	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	96.5	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	110	70	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: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 2447182)							
ES1920264-014	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	102	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	107	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	108	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	103	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	105	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	104	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	103	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2447195)							
ES1920749-001	SW-DIP	EG035T: Mercury	7439-97-6	0.01 mg/L	77.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2448983)							
ES1920675-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	97.4	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2448983)							
ES1920675-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	100.0	70	130
EP080: BTEXN (QCLot: 2448983)							
ES1920675-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	98.6	70	130
		EP080: Toluene	108-88-3	25 µg/L	86.8	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	95.7	70	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 2448983) - continued							
ES1920675-001	Anonymous	EP080: meta- & para-Xylene	108-38-3	25 µg/L	96.1	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	128	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	95.2	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order : ES1920749

Page : 1 of 6

Amendment : 1

Client : CAVVANBA CONSULTING

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Telephone : [REDACTED]

Project : 19038

Date Samples Received : 04-Jul-2019

Site : ----

Issue Date : 12-Jul-2019

Sampler : [REDACTED]

No. of samples received : 5

Order number : 19038

No. of samples analysed : 5

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: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP066: Polychlorinated Biphenyls (PCB)						
Amber Glass Bottle - Unpreserved SW-DIP	10-Jul-2019	08-Jul-2019	2	----	----	----
EP068A: Organochlorine Pesticides (OC)						
Amber Glass Bottle - Unpreserved SW-DIP	10-Jul-2019	08-Jul-2019	2	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Amber Glass Bottle - Unpreserved SW-DIP	10-Jul-2019	08-Jul-2019	2	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Amber Glass Bottle - Unpreserved SW-DIP	10-Jul-2019	08-Jul-2019	2	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Amber Glass Bottle - Unpreserved SW-DIP	10-Jul-2019	08-Jul-2019	2	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	18	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	18	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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



Matrix: **WATER**

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

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) SW-DIP, QW01	01-Jul-2019	05-Jul-2019	28-Dec-2019	✓	05-Jul-2019	28-Dec-2019	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) SW_DAM	02-Jul-2019	05-Jul-2019	29-Dec-2019	✓	05-Jul-2019	29-Dec-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) SW-DIP, QW01	01-Jul-2019	----	----	----	05-Jul-2019	29-Jul-2019	✓
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) SW_DAM	02-Jul-2019	----	----	----	05-Jul-2019	30-Jul-2019	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066) QW01	01-Jul-2019	05-Jul-2019	08-Jul-2019	✓	05-Jul-2019	14-Aug-2019	✓
Amber Glass Bottle - Unpreserved (EP066) SW-DIP	01-Jul-2019	10-Jul-2019	08-Jul-2019	✗	10-Jul-2019	19-Aug-2019	✓
Amber Glass Bottle - Unpreserved (EP066) SW_DAM	02-Jul-2019	05-Jul-2019	09-Jul-2019	✓	05-Jul-2019	14-Aug-2019	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068) QW01	01-Jul-2019	05-Jul-2019	08-Jul-2019	✓	05-Jul-2019	14-Aug-2019	✓
Amber Glass Bottle - Unpreserved (EP068) SW-DIP	01-Jul-2019	10-Jul-2019	08-Jul-2019	✗	10-Jul-2019	19-Aug-2019	✓
Amber Glass Bottle - Unpreserved (EP068) SW_DAM	02-Jul-2019	05-Jul-2019	09-Jul-2019	✓	05-Jul-2019	14-Aug-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) QW01	01-Jul-2019	05-Jul-2019	08-Jul-2019	✓	05-Jul-2019	14-Aug-2019	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) SW-DIP	01-Jul-2019	10-Jul-2019	08-Jul-2019	✗	10-Jul-2019	19-Aug-2019	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) SW_DAM	02-Jul-2019	05-Jul-2019	09-Jul-2019	✓	05-Jul-2019	14-Aug-2019	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) QW01	01-Jul-2019	05-Jul-2019	08-Jul-2019	✓	05-Jul-2019	14-Aug-2019	✓
Amber Glass Bottle - Unpreserved (EP071) SW-DIP	01-Jul-2019	10-Jul-2019	08-Jul-2019	✗	11-Jul-2019	19-Aug-2019	✓
Amber Glass Bottle - Unpreserved (EP071) SW_DAM	02-Jul-2019	05-Jul-2019	09-Jul-2019	✓	05-Jul-2019	14-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) SW-DIP, QW01, Trip Spike, Trip Blank	01-Jul-2019	05-Jul-2019	15-Jul-2019	✓	05-Jul-2019	15-Jul-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) SW_DAM	02-Jul-2019	05-Jul-2019	16-Jul-2019	✓	05-Jul-2019	16-Jul-2019	✓



Matrix: **WATER**

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

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) QW01	01-Jul-2019	05-Jul-2019	08-Jul-2019	✔	05-Jul-2019	14-Aug-2019	✔
Amber Glass Bottle - Unpreserved (EP071) SW-DIP	01-Jul-2019	10-Jul-2019	08-Jul-2019	✖	11-Jul-2019	19-Aug-2019	✔
Amber Glass Bottle - Unpreserved (EP071) SW_DAM	02-Jul-2019	05-Jul-2019	09-Jul-2019	✔	05-Jul-2019	14-Aug-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) SW-DIP, QW01, Trip Spike, Trip Blank	01-Jul-2019	05-Jul-2019	15-Jul-2019	✔	05-Jul-2019	15-Jul-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) SW_DAM	02-Jul-2019	05-Jul-2019	16-Jul-2019	✔	05-Jul-2019	16-Jul-2019	✔
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) SW-DIP, QW01, Trip Spike, Trip Blank	01-Jul-2019	05-Jul-2019	15-Jul-2019	✔	05-Jul-2019	15-Jul-2019	✔
Amber VOC Vial - Sulfuric Acid (EP080) SW_DAM	02-Jul-2019	05-Jul-2019	16-Jul-2019	✔	05-Jul-2019	16-Jul-2019	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	18	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	3	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	18	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	3	66.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	3	66.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	6	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	18	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	3	66.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	3	66.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	6	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	18	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	3	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	3	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
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.
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 (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
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 (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

BRISBANE 32 Shand Street Sturtford QLD 4059
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

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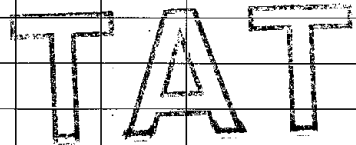
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8655 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 98 Kenny Street Wallongong NSW 2530
Ph: 02 4225 3129 E: portkembla@alsglobal.com

CLIENT: Cavvanba Consulting		TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		<input type="checkbox"/> Standard TAT (List due date): <input checked="" type="checkbox"/> Non Standard or urgent TAT (List due date): 24 HR TAT		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Byron Bay		ALS QUOTE NO.: SYBQ/409/18		COC SEQUENCE NUMBER (Circle)		Custody Seal Intact? Yes No N/A	
PROJECT: 19038				COC: 0 2 3 4 5 6 7		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER: 19038				OF: 0 2 3 4 5 6 7		Random Sample Temperature on Receipt °C	
PROJECT MANAGER: [REDACTED]		CONTACT PH: [REDACTED]				Other comment:	
SAMPLER: [REDACTED]		SAMPLER MO: [REDACTED]		RELINQUISHED BY: [REDACTED]		RECEIVED BY: [REDACTED]	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME: 03/07/2019		DATE/TIME: 4/7/19 13:45	
Email Reports to (will default to PM if no other addresses are listed):						DATE/TIME:	
Email Invoice to (will default to PM if no other addresses are listed):						DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information			
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <small>to codes below</small>	(refer	TOTAL CONTAINERS	W-8 TRH (C6-C40)/BTEXN/PAH/OC/PCB/8 Metals	W-18 TRH (C6-C10)/BTEXN								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
1	SW_DIP	1/07/2019	Water	Ambers, vials and plastic metals bottle			x									Environmental Division Sydney Work Order Reference ES1920749	
2	SW_DAM	2/07/2019	Water	Ambers, vials and plastic metals bottle			x										
3	QW01	1/07/2019	Water	Ambers, vials and plastic metals bottle			x										
	QW02	1/07/2019	Water	Ambers, vials and plastic metals bottle			Please forward analysis to Envirolab for TRH (C6-C40)/BTEXN/PAH/OC/PCB/8 Metals										
4	Trip Spike	1/07/2019	Water	Vials				x									
5	Trip Blank	1/07/2019	Water	Vials				x								 Telephone : + 61-2-8784 8555	
Subcon / Forward Lab / Split WO						Lab / Analysis: <u>Envirolab (QW02)</u>											
Organised By / Date:						Relinquished By / Date: <u>4/2/19</u>											
Connote / Courier:						WO No: <u>ES1920749</u>											
Attached By PO / Internal Sheet:																	
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 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.

CERTIFICATE OF ANALYSIS 221111

Client Details

Client	Cavvanba
Attention	
Address	PO Box 2191, Byron Bay, NSW, 2481

Sample Details

Your Reference	<u>19038</u>
Number of Samples	1 WATER
Date samples received	05/07/2019
Date completed instructions received	05/07/2019

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.


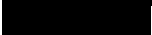
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

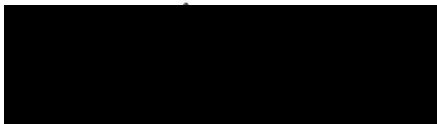
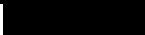
Report Details

Date results requested by	08/07/2019
Date of Issue	08/07/2019
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Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

, Metals Supervisor
, Organics Supervisor

Authorised By


, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference		221111-1
Your Reference	UNITS	QW02
Date Sampled		01/07/2019
Type of sample		WATER
Date extracted	-	08/07/2019
Date analysed	-	08/07/2019
TRH C ₆ - C ₉	µg/L	150
TRH C ₆ - C ₁₀	µg/L	170
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	170
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	122
Surrogate toluene-d8	%	116
Surrogate 4-BFB	%	76

svTRH (C10-C40) in Water		
Our Reference		221111-1
Your Reference	UNITS	QW02
Date Sampled		01/07/2019
Type of sample		WATER
Date extracted	-	08/07/2019
Date analysed	-	08/07/2019
TRH C ₁₀ - C ₁₄	µg/L	440
TRH C ₁₅ - C ₂₈	µg/L	17,000
TRH C ₂₉ - C ₃₆	µg/L	410
TRH >C ₁₀ - C ₁₆	µg/L	6,900
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	6,900
TRH >C ₁₆ - C ₃₄	µg/L	11,000
TRH >C ₃₄ - C ₄₀	µg/L	<100
Surrogate o-Terphenyl	%	124

PAHs in Water		
Our Reference		221111-1
Your Reference	UNITS	QW02
Date Sampled		01/07/2019
Type of sample		WATER
Date extracted	-	08/07/2019
Date analysed	-	08/07/2019
Naphthalene	µg/L	<10
Acenaphthylene	µg/L	<10
Acenaphthene	µg/L	<10
Fluorene	µg/L	<10
Phenanthrene	µg/L	<10
Anthracene	µg/L	<10
Fluoranthene	µg/L	<10
Pyrene	µg/L	<10
Benzo(a)anthracene	µg/L	<10
Chrysene	µg/L	<10
Benzo(b,j+k)fluoranthene	µg/L	<20
Benzo(a)pyrene	µg/L	<10
Indeno(1,2,3-c,d)pyrene	µg/L	<10
Dibenzo(a,h)anthracene	µg/L	<10
Benzo(g,h,i)perylene	µg/L	<10
Benzo(a)pyrene TEQ	µg/L	<50
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate <i>p</i> -Terphenyl-d14	%	109

OCP in water		
Our Reference		221111-1
Your Reference	UNITS	QW02
Date Sampled		01/07/2019
Type of sample		WATER
Date extracted	-	08/07/2019
Date analysed	-	08/07/2019
HCB	µg/L	<2
alpha-BHC	µg/L	<2
gamma-BHC	µg/L	<2
beta-BHC	µg/L	<2
Heptachlor	µg/L	<2
delta-BHC	µg/L	<2
Aldrin	µg/L	<2
Heptachlor Epoxide	µg/L	<2
gamma-Chlordane	µg/L	<2
alpha-Chlordane	µg/L	<2
Endosulfan I	µg/L	<2
pp-DDE	µg/L	<2
Dieldrin	µg/L	<2
Endrin	µg/L	<2
pp-DDD	µg/L	<2
Endosulfan II	µg/L	<2
pp-DDT	µg/L	<2
Endrin Aldehyde	µg/L	<2
Endosulfan Sulphate	µg/L	<2
Methoxychlor	µg/L	<2
Surrogate TCMX	%	99

PCBs in Water		
Our Reference		221111-1
Your Reference	UNITS	QW02
Date Sampled		01/07/2019
Type of sample		WATER
Date extracted	-	08/07/2019
Date analysed	-	08/07/2019
Aroclor 1016	µg/L	<20
Aroclor 1221	µg/L	<20
Aroclor 1232	µg/L	<20
Aroclor 1242	µg/L	<20
Aroclor 1248	µg/L	<20
Aroclor 1254	µg/L	<20
Aroclor 1260	µg/L	<20
Surrogate TCLMX	%	99

HM in water - total		
Our Reference		221111-1
Your Reference	UNITS	QW02
Date Sampled		01/07/2019
Type of sample		WATER
Date prepared	-	08/07/2019
Date analysed	-	08/07/2019
Arsenic-Total	µg/L	3
Cadmium-Total	µg/L	1.3
Chromium-Total	µg/L	2
Copper-Total	µg/L	1,000
Lead-Total	µg/L	12
Mercury-Total	µg/L	<0.05
Nickel-Total	µg/L	6
Zinc-Total	µg/L	3,400

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-003	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-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-016	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)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
Date analysed	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	87	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	80	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-016	116	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate toluene-d8	%		Org-016	96	[NT]	[NT]	[NT]	[NT]	95	[NT]
Surrogate 4-BFB	%		Org-016	83	[NT]	[NT]	[NT]	[NT]	115	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
Date analysed	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
TRH C ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	85	[NT]
TRH C ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	89	[NT]
TRH C ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	85	[NT]
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	89	[NT]
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
Surrogate o-Terphenyl	%		Org-003	84	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: PAHs in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
Date analysed	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
Naphthalene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	122	[NT]
Acenaphthylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Phenanthrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Benzo(a)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-012	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	90	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: OCP in water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
Date analysed	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
HCB	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
gamma-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Heptachlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	98	[NT]
delta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
gamma-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Dieldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Endrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	96	[NT]
pp-DDD	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	117	[NT]
Endosulfan II	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Methoxychlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	88	[NT]	[NT]	[NT]	[NT]	76	[NT]

QUALITY CONTROL: PCBs in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
Date analysed	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
Aroclor 1016	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	101	[NT]
Aroclor 1260	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCLMX	%		Org-006	88	[NT]	[NT]	[NT]	[NT]	79	[NT]

QUALITY CONTROL: HM in water - total					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
Date analysed	-			08/07/2019	[NT]	[NT]	[NT]	[NT]	08/07/2019	[NT]
Arsenic-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Chromium-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Copper-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Lead-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Mercury-Total	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	91	[NT]
Nickel-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Zinc-Total	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]

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.	

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; 60-140% for organics (+/-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.

Report Comments

PAHs in Water - The PQL has been raised due to interferences from analytes (other than those being tested) in sample 221111-1.

OCP/PCB in water - The PQL has been raised due to interferences from analytes (other than those being tested) in sample 221111-1

SAMPLE RECEIPT ADVICE

Client Details

Client	Cavvanba
Attention	

Sample Login Details

Your reference	19038
Envirolab Reference	221111
Date Sample Received	05/07/2019
Date Instructions Received	05/07/2019
Date Results Expected to be Reported	08/07/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 WATER
Turnaround Time Requested	1 day
Temperature on Receipt (°C)	12.7
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Phone:		Phone:	
Fax:		Fax:	
Email:		Email:	

Analysis Underway, details on the following page:

**Envirolab Services Pty Ltd**

ABN 37 112 535 645

12 Ashley St Chatswood NSW 2067

ph 02 9910 6200 fax 02 9910 6201

customerservice@envirolab.com.au

www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHsin Water	OCP in water	PCBs in Water	HM in water - dissolved
QW02	✓	✓	✓	✓	✓	✓

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.

CERTIFICATE OF ANALYSIS

Work Order : **ES1922275**
Client : **CAVVANBA CONSULTING**
Contact : [REDACTED]
Address : PO BOX 2191
 BYRON BAY NSW 2481
Telephone : [REDACTED]
Project : 19038
Order number : 19038
C-O-C number : ----
Sampler : [REDACTED]
Site : ----
Quote number : SYBQ/409/18
No. of samples received : 8
No. of samples analysed : 8

Page : 1 of 9
Laboratory : Environmental Division Sydney
Contact : [REDACTED]
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : [REDACTED]
Date Samples Received : 17-Jul-2019 11:30
Date Analysis Commenced : 17-Jul-2019
Issue Date : 19-Jul-2019 11:09



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED] r	Organic Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.



Analytical Results

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

Client sample ID

				MW01	MW02	MW03	MW04	MW05
Client sampling date / time				16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1922275-001	ES1922275-002	ES1922275-003	ES1922275-004	ES1922275-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	<0.001	<0.001	0.003
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.002	<0.001	<0.001	0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	0.008	0.005	0.010	0.015	0.008
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	0.0005	<0.0001	0.0002	0.0003	<0.0001
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	<1	<1	<1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				MW01	MW02	MW03	MW04	MW05
Client sampling date / time				16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1922275-001	ES1922275-002	ES1922275-003	ES1922275-004	ES1922275-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	340	200	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	340	200	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	410	240	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW01	MW02	MW03	MW04	MW05
Client sampling date / time					16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1922275-001	ES1922275-002	ES1922275-003	ES1922275-004	ES1922275-005
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	410	240	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		97.9	109	109	92.1	89.8
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		76.3	87.7	78.5	83.1	94.7
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		93.0	86.1	99.2	73.0	94.1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		27.8	25.4	28.0	30.2	31.7
2-Chlorophenol-D4	93951-73-6	1.0	%		60.7	45.8	58.3	58.2	58.7
2,4,6-Tribromophenol	118-79-6	1.0	%		77.5	86.2	87.5	75.4	76.0
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		75.5	79.9	80.3	74.1	71.8
Anthracene-d10	1719-06-8	1.0	%		81.1	94.2	99.6	72.0	88.1
4-Terphenyl-d14	1718-51-0	1.0	%		78.2	96.0	93.5	87.1	93.9
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		88.2	87.3	89.1	84.7	81.2
Toluene-D8	2037-26-5	2	%		99.2	99.5	101	89.1	88.6
4-Bromofluorobenzene	460-00-4	2	%		92.8	93.4	94.7	87.8	83.9



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				QW03	Trip Spike	Trip Blank	----	----
Client sampling date / time				16-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1922275-006	ES1922275-007	ES1922275-008	-----	-----
				Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.002	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.002	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.007	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	0.0005	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	----	----
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	----	----
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	----	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				QW03	Trip Spike	Trip Blank	----	----
Client sampling date / time				16-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1922275-006	ES1922275-007	ES1922275-008	-----	-----
				Result	Result	Result	----	----

EP068A: Organochlorine Pesticides (OC) - Continued

^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	----	----	----	----

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	20	µg/L	<20	220	<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	260	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	180	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QW03	Trip Spike	Trip Blank	----	----
Client sampling date / time					16-Jul-2019 00:00	15-Jul-2019 00:00	15-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1922275-006	ES1922275-007	ES1922275-008	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >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	16	<1	----	----
Toluene	108-88-3	2	µg/L		<2	16	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	16	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	16	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	16	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	32	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	80	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	18	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		76.8	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		91.2	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		70.1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		29.8	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		56.2	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		71.9	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		67.5	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		82.2	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		84.9	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		95.1	107	90.8	----	----
Toluene-D8	2037-26-5	2	%		112	122	103	----	----
4-Bromofluorobenzene	460-00-4	2	%		92.5	96.4	95.8	----	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	29	129
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: ES1922275	Page	: 1 of 6
Client	: CAVVANBA CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: PO BOX 2191 BYRON BAY NSW 2481	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [REDACTED]	Telephone	: [REDACTED]
Project	: 19038	Date Samples Received	: 17-Jul-2019
Order number	: 19038	Date Analysis Commenced	: 17-Jul-2019
C-O-C number	: ----	Issue Date	: 19-Jul-2019
Sampler	: [REDACTED]		
Site	: ----		
Quote number	: SYBQ/409/18		
No. of samples received	: 8		
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. 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
[REDACTED]	Organic Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Analyst	Sydney Inorganics, Smithfield, NSW

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

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

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

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

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2471331)									
EW1903009-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
EW1903009-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 2471329)									
ES1921766-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1921945-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0002	0.0003	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 2471333)									
ES1922275-003	MW03	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0002	0.0002	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2471160)									
ES1922275-001	MW01	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2471160)									
ES1922275-001	MW01	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2471160)									

Page : 3 of 6
 Work Order : ES1922275
 Client : CAVVANBA CONSULTING
 Project : 19038



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 2471160) - continued									
ES1922275-001	MW01	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



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

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

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 2471331)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.8	85	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.8	84	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	91.6	85	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.3	81	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	89.5	83	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	90.4	82	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.3	81	117
EG035F: Dissolved Mercury by FIMS (QCLot: 2471329)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.3	83	105
EG035F: Dissolved Mercury by FIMS (QCLot: 2471333)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.5	83	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2471110)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	82.0	62	107
EP068A: Organochlorine Pesticides (OC) (QCLot: 2471108)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	85.4	65	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	81.3	58	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	82.6	69	117
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	96.9	70	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	87.4	69	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	101	65	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	95.3	66	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	88.0	67	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	86.9	64	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	79.2	67	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	90.7	63	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	79.9	65	113
EP068: 4,4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	77.0	66	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	77.9	65	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	76.9	67	114
EP068: 4,4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	76.2	72	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	92.3	67	109
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	81.1	65	112
EP068: 4,4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	78.1	65	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	74.6	64	110



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068A: Organochlorine Pesticides (OC) (QCLot: 2471108) - continued								
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	103	61	114
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2471109)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	78.2	50	94
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	92.3	64	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	79.9	62	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	87.4	64	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	96.8	63	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	89.4	64	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	103	64	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	100	63	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	108	64	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	105	63	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	107	62	119
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	104	63	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	103	63	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	110	60	118
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	113	61	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	104	59	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2471107)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	72.1	56	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	72.2	72	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	61.0	56	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2471160)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	91.6	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2471107)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	69.9	58	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	76.5	63	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	70.6	62	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2471160)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	93.0	75	127
EP080: BTEXN (QCLot: 2471160)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	102	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	99.8	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	95.6	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	88.6	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	88.9	72	122



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EP080: BTEXN (QCLot: 2471160) - continued								
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	102	70	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: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 2471331)							
ES1921972-008	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	99.0	70	130
		EG020A-F: Cadmium	7440-43-9	0.1 mg/L	94.9	70	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	88.6	70	130
		EG020A-F: Copper	7440-50-8	1 mg/L	91.3	70	130
		EG020A-F: Lead	7439-92-1	1 mg/L	86.4	70	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	88.8	70	130
		EG020A-F: Zinc	7440-66-6	5 mg/L	93.3	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 2471329)							
ES1921765-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	91.9	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 2471333)							
ES1922275-002	MW02	EG035F: Mercury	7439-97-6	0.01 mg/L	88.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2471160)							
ES1922275-001	MW01	EP080: C6 - C9 Fraction	----	325 µg/L	75.0	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2471160)							
ES1922275-001	MW01	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	73.0	70	130
EP080: BTEXN (QCLot: 2471160)							
ES1922275-001	MW01	EP080: Benzene	71-43-2	25 µg/L	77.8	70	130
		EP080: Toluene	108-88-3	25 µg/L	82.4	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	79.7	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	79.2	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	81.1	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	84.4	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order : ES1922275

Page : 1 of 5

Client : CAVVANBA CONSULTING

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Telephone : [REDACTED]

Project : 19038

Date Samples Received : 17-Jul-2019

Site : ----

Issue Date : 19-Jul-2019

Sampler : [REDACTED]

No. of samples received : 8

Order number : 19038

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.

Matrix: WATER

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

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.

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

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

Matrix: WATER

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)		16-Jul-2019	----	----	----	17-Jul-2019	12-Jan-2020	✓
MW01,	MW02,							
MW03,	MW04,							
MW05,	QW03							
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)		16-Jul-2019	----	----	----	18-Jul-2019	13-Aug-2019	✓
MW01,	MW02,							
MW03,	MW04,							
MW05,	QW03							
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)		16-Jul-2019	17-Jul-2019	23-Jul-2019	✓	18-Jul-2019	26-Aug-2019	✓
MW01,	MW02,							
MW03,	MW04,							
MW05,	QW03							



Matrix: **WATER**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)								
Amber Glass Bottle - Unpreserved (EP068)								
MW01, MW03, MW05,	MW02, MW04, QW03	16-Jul-2019	17-Jul-2019	23-Jul-2019	✓	18-Jul-2019	26-Aug-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
MW01, MW03, MW05,	MW02, MW04, QW03	16-Jul-2019	17-Jul-2019	23-Jul-2019	✓	18-Jul-2019	26-Aug-2019	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
MW01, MW03, MW05,	MW02, MW04, QW03	16-Jul-2019	17-Jul-2019	23-Jul-2019	✓	18-Jul-2019	26-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
Trip Spike,	Trip Blank	15-Jul-2019	17-Jul-2019	29-Jul-2019	✓	17-Jul-2019	29-Jul-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
MW01, MW03, MW05,	MW02, MW04, QW03	16-Jul-2019	17-Jul-2019	30-Jul-2019	✓	17-Jul-2019	30-Jul-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
MW01, MW03, MW05,	MW02, MW04, QW03	16-Jul-2019	17-Jul-2019	23-Jul-2019	✓	18-Jul-2019	26-Aug-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
Trip Spike,	Trip Blank	15-Jul-2019	17-Jul-2019	29-Jul-2019	✓	17-Jul-2019	29-Jul-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
MW01, MW03, MW05,	MW02, MW04, QW03	16-Jul-2019	17-Jul-2019	30-Jul-2019	✓	17-Jul-2019	30-Jul-2019	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
Trip Spike,	Trip Blank	15-Jul-2019	17-Jul-2019	29-Jul-2019	✓	17-Jul-2019	29-Jul-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
MW01, MW03, MW05,	MW02, MW04, QW03	16-Jul-2019	17-Jul-2019	30-Jul-2019	✓	17-Jul-2019	30-Jul-2019	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	6	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	6	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	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)							
Dissolved Mercury by FIMS	EG035F	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	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)							
Dissolved Mercury by FIMS	EG035F	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	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)							
Dissolved Mercury by FIMS	EG035F	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	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
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



ALS
Environmental

ALS Laboratory:
please tick →

BRISBANE 32 Shand Street Stafford QLD 4059
Ph 07 3243 7222 E: samples.brisbane@daifloglobal.com

GLADSTONE 46 Callemondah Drive Clinton QLD 4890
Ph: 07 7471 5600 E: gladstone@gladstone.com

GADELAIDE 21 Burma Road Peoraka BA 5095
Gh. 08 8359 0290 E. gadelaide@belsat.net

OMACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 9177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 0200 E: samples@colgateagents.com.au

MUDGEES 27 Sydney Road Mudgee NSW 2850
 Fax: 02 6332 6735 E: mudgees.mail@iaincokel.com

NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
Ph: 02 4214 2600 E: norah@newcastle.com.au

ONOWRA 4/13 Geary Place North Nanyra NSW 254

Ph: 024423 2063 E: nayana@aisglobal.com

UPERTH 10 Hed Way Malaga WA 6000
Ph: 08 9209 7655 E: samples.perth@ainstohai.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8855 E: samples.sydney@als-johal.com

Ph. 07 4396 0600 E. info@ville-environnement-ecolepaul.com

LWOLLONGONG 49 Kenny Street Wollongong NSW 2500
Ph 02 4225 3125 E. portkembia@alaglobal.com

CLIENT: Cavvanba Consulting		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: Byron Bay		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics) <input checked="" type="checkbox"/> Non Standard or urgent TAT (List due date): 24 HR TAT		Custody Seal Intact? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
PROJECT: 19038		ALS QUOTE NO.: SYBQ/409/18		Free ice / frozen ice bricks present upon receipt? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
ORDER NUMBER: 19038				Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: E [REDACTED]		CONTACT PH: [REDACTED]		Other comment:	
SAMPLER: [REDACTED]		SAMPLER MO: [REDACTED]			
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):			
Email Reports to (will default to PM if no other addresses are listed): glen@cavvanba.com, ross@cavvanba.com		RELINQUISHED BY: [REDACTED]		RECEIVED BY: [REDACTED]	
Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com		DATE/TIME: 16/07/2019		DATE/TIME: 17/7/19 11:30	

[illegible]

Environmental Division
Sydney
Work Order Reference
ES1922275



Telephone : + 61-2-8784 8555

Subcon / Forward Lab / Split WO
Lab / Analysis: Enviro lab
Organised By / Date:
Relinquished By / Date: Sample & WO4
Connote / Courier: ES 1922275
WO No:

TA

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 Aerial HCl Preserved; VO = VOA Vial Sodium Bisulfate Preserved; VS VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Plastic; AS = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Spills; R = Unpreserved Bag
S = Sulfuric Preserved Amber Glass; H = HCl Preserved Amber Glass; H2O2 = Hydrogen Peroxide Preserved Plastic; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES1922275

Client : **CAVVANBA CONSULTING**
 Contact : **[REDACTED]**
 Address : PO BOX 2191
 BYRON BAY NSW 2481

E-mail : **[REDACTED]**
 Telephone : **[REDACTED]**
 Facsimile : +61 02 6685 5083

Project : 19038
 Order number : 19038
 C-O-C number : ----
 Site : ----
 Sampler : **[REDACTED]**

Laboratory : Environmental Division Sydney
 Contact : **[REDACTED]**
 Address : 277-289 Woodpark Road Smithfield
 NSW Australia 2164

E-mail : **[REDACTED]**
 Telephone : **[REDACTED]**
 Facsimile : +61-2-8784 8500

Page : 1 of 3
 Quote number : EB2017CAVCON0001 (SYBQ/409/18)
 QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 17-Jul-2019 11:30
 Client Requested Due : 18-Jul-2019
 Date

Issue Date : 17-Jul-2019
 Scheduled Reporting Date : **18-Jul-2019**

Delivery Details

Mode of Delivery : Carrier
 No. of coolers/boxes : 1
 Receipt Detail :

Security Seal : Not Available
 Temperature : 5.7°C - Ice Bricks present
 No. of samples received / analysed : 8 / 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
- This is an updated SRN which indicates the prelim report and the complete release date for this work order.
- **Sample QW04 forwarded to Envirolab for the analysis as per the COC.**
- **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.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- 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.
- Preliminary results with the reports approved for TPH/BTEX/PAH/8 METALS will be available on the scheduled reporting date listed in this report. However the final report with OC/OP analysis will be complete on 19/07/19.
- 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: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-08 TRH/BTEXN/PAH/OC/PCB/8 Metals	WATER - W-18 TRH(C6 - C9)/BTEXN
ES1922275-001	16-Jul-2019 00:00	MW01	✓	
ES1922275-002	16-Jul-2019 00:00	MW02	✓	
ES1922275-003	16-Jul-2019 00:00	MW03	✓	
ES1922275-004	16-Jul-2019 00:00	MW04	✓	
ES1922275-005	16-Jul-2019 00:00	MW05	✓	
ES1922275-006	16-Jul-2019 00:00	QW03	✓	
ES1922275-007	15-Jul-2019 00:00	Trip Spike		✓
ES1922275-008	15-Jul-2019 00:00	Trip Blank		✓

Proactive Holding Time Report

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

ACCOUNTS PAYABLE

Email inbox@cavvanba.com

Email ben@cayvanba.com

Email ben@cavvanba.com

Email ben@cavvanba.com

Email ben@cavvanba.com

Email ben@cavvanba.com

Email ben@cavvanba.com

Email ben@cavvanba.com

Email glen@cavvanba.com

Email glen@cavvanba.com

Email glen@cavvanba.com

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Email glen@cavvanba.com

Email rob@cavvanba.com

Email ross@cavvanba.com

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Email ross@cavvanba.com

Email ross@cavvanba.com

CERTIFICATE OF ANALYSIS

Work Order : **ES1922761**
Client : **CAVVANBA CONSULTING**
Contact : **[REDACTED]**
Address : **NEWCASTLE**
Telephone : **[REDACTED]**
Project : **19038**
Order number : **19038**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **SYBQ/409/18**
No. of samples received : **5**
No. of samples analysed : **5**

Page : 1 of 2
Laboratory : Environmental Division Sydney
Contact : **[REDACTED]**
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : **[REDACTED]**
Date Samples Received : 19-Jul-2019 15:30
Date Analysis Commenced : 22-Jul-2019
Issue Date : 22-Jul-2019 19:12



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories

Position

Accreditation Category

[REDACTED]

Senior Spectroscopist

Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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.

Analytical Results

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

Client sample ID

				MW01	MW02	MW03	MW04	MW05
Client sampling date / time				16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00	16-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	ES1922761-001	ES1922761-002	ES1922761-003	ES1922761-004	ES1922761-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	0.00045	0.00005	0.00020	0.00024	0.00012

QUALITY CONTROL REPORT

Work Order	: ES1922761	Page	: 1 of 3
Client	: CAVVANBA CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: [REDACTED]	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: [REDACTED]	Telephone	: [REDACTED]
Project	: 19038	Date Samples Received	: 19-Jul-2019
Order number	: 19038	Date Analysis Commenced	: 22-Jul-2019
C-O-C number	: ----	Issue Date	: 22-Jul-2019
Sampler	: ----		
Site	: ----		
Quote number	: SYBQ/409/18		
No. of samples received	: 5		
No. of samples analysed	: 5		



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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Accreditation Category
[REDACTED]	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Recovery Limits (%)</i>
EG035F: Dissolved Mercury by FIMS (QC Lot: 2478527)									
ES1922761-001	MW01	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	0.00045	0.00046	3.06	0% - 50%
ES1922770-006	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit



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

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

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit		Result	Concentration	LCS	Low
EG035F: Dissolved Mercury by FIMS (QCLot: 2478527)								
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	102	83	105

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 2478527)							
ES1922761-001	MW01	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	# Not Determined	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order : ES1922761

Page : 1 of 4

Client : CAVVANBA CONSULTING

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Telephone : [REDACTED]

Project : 19038

Date Samples Received : 19-Jul-2019

Site : ----

Issue Date : 22-Jul-2019

Sampler : ----

No. of samples received : 5

Order number : 19038

No. of samples analysed : 5

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	ES1922761--001	MW01	Mercury	7439-97-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F-LL)		16-Jul-2019	----	----	----	22-Jul-2019	13-Aug-2019	✔
MW01,	MW02,							
MW03,	MW04,							
MW05								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS - Low Level	EG035F-LL	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES1922761

Client : **CAVVANBA CONSULTING**
 Contact : [REDACTED]
 Address :
 NEWCASTLE

E-mail : [REDACTED]
 Telephone : [REDACTED]
 Facsimile : +61 02 6685 5083

Project : 19038
 Order number : 19038
 C-O-C number : ----
 Site : ----
 Sampler :

Laboratory : Environmental Division Sydney
 Contact : [REDACTED]
 Address : 277-289 Woodpark Road Smithfield
 NSW Australia 2164

E-mail : [REDACTED]
 Telephone : [REDACTED]
 Facsimile : +61-2-8784 8500

Page : 1 of 2
 Quote number : EB2017CAVCON0001 (SYBQ/409/18)
 QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 19-Jul-2019 15:30
 Client Requested Due : 22-Jul-2019
 Date

Issue Date : 20-Jul-2019
 Scheduled Reporting Date : **22-Jul-2019**

Delivery Details

Mode of Delivery : Undefined
 No. of coolers/boxes : ----
 Receipt Detail : THIS IS A REBATHC OF
 ES1922275

Security Seal : Not Available
 Temperature : 4.1°C
 No. of samples received / analysed : 5 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **This work order is a rebatch of ES1922275.**
- **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.**
- Please note that the scheduled reporting date has not been confirmed with laboratory management . If the scheduled reporting date is not achievable ALS will be in contact with you.
- 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.

Email ross@cavvanba.com

CERTIFICATE OF ANALYSIS 221855

Client Details

Client	Cavvanba
Attention	
Address	PO Box 2191, Byron Bay, NSW, 2481

Sample Details

Your Reference	<u>19038</u>
Number of Samples	1 Water
Date samples received	17/07/2019
Date completed instructions received	17/07/2019


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	18/07/2019
Date of Issue	18/07/2019
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

 I, Senior Chemist
Laboratory Manager, Sydney
, Organics Supervisor

Authorised By


, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference		221855-1
Your Reference	UNITS	QW04
Date Sampled		16/07/2019
Type of sample		Water
Date extracted	-	17/07/2019
Date analysed	-	18/07/2019
TRH C ₆ - C ₉	µg/L	<10
TRH C ₆ - C ₁₀	µg/L	<10
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	97
Surrogate toluene-d8	%	101
Surrogate 4-BFB	%	88

svTRH (C10-C40) in Water		
Our Reference		221855-1
Your Reference	UNITS	QW04
Date Sampled		16/07/2019
Type of sample		Water
Date extracted	-	18/07/2019
Date analysed	-	18/07/2019
TRH C ₁₀ - C ₁₄	µg/L	<50
TRH C ₁₅ - C ₂₈	µg/L	<100
TRH C ₂₉ - C ₃₆	µg/L	<100
TRH >C ₁₀ - C ₁₆	µg/L	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50
TRH >C ₁₆ - C ₃₄	µg/L	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100
Surrogate o-Terphenyl	%	83

PAHs in Water		
Our Reference		221855-1
Your Reference	UNITS	QW04
Date Sampled		16/07/2019
Type of sample		Water
Date extracted	-	18/07/2019
Date analysed	-	18/07/2019
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate <i>p</i> -Terphenyl-d14	%	80

OCP in water		
Our Reference		221855-1
Your Reference	UNITS	QW04
Date Sampled		16/07/2019
Type of sample		Water
Date extracted	-	18/07/2019
Date analysed	-	18/07/2019
HCB	µg/L	<0.2
alpha-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
beta-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	97

PCBs in Water		
Our Reference		221855-1
Your Reference	UNITS	QW04
Date Sampled		16/07/2019
Type of sample		Water
Date extracted	-	18/07/2019
Date analysed	-	18/07/2019
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCLMX	%	97

HM in water - dissolved		
Our Reference		221855-1
Your Reference	UNITS	QW04
Date Sampled		16/07/2019
Type of sample		Water
Date prepared	-	18/07/2019
Date analysed	-	18/07/2019
Arsenic-Dissolved	µg/L	2
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	0.52
Nickel-Dissolved	µg/L	2
Zinc-Dissolved	µg/L	10

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-003	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-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-016	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.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			17/07/2019	[NT]	[NT]	[NT]	[NT]	17/07/2019	[NT]
Date analysed	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	98	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	96	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-016	97	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate toluene-d8	%		Org-016	97	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-BFB	%		Org-016	88	[NT]	[NT]	[NT]	[NT]	93	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
TRH C ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	80	[NT]
TRH C ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	77	[NT]
TRH C ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	82	[NT]
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	80	[NT]
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	77	[NT]
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	82	[NT]
Surrogate o-Terphenyl	%		Org-003	83	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: PAHs in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Naphthalene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Acenaphthylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Phenanthrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	76	[NT]
Pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Benzo(a)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	76	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-012	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	80	[NT]	[NT]	[NT]	[NT]	80	[NT]

QUALITY CONTROL: OCP in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
HCB	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
gamma-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Heptachlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
delta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
gamma-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Dieldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Endrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
pp-DDD	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Endosulfan II	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Methoxychlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	96	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: PCBs in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Aroclor 1016	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Aroclor 1260	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCLMX	%		Org-006	96	[NT]	[NT]	[NT]	[NT]	73	[NT]

QUALITY CONTROL: HM in water - dissolved					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	98	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]

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.	

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; 60-140% for organics (+/-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.

SAMPLE RECEIPT ADVICE

Client Details

Client	Cavvanba
Attention	

Sample Login Details

Your reference	19038
Envirolab Reference	221855
Date Sample Received	17/07/2019
Date Instructions Received	17/07/2019
Date Results Expected to be Reported	18/07/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Water
Turnaround Time Requested	1 day
Temperature on Receipt (°C)	11.7
Cooling Method	None
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Phone:		Phone:	
Fax:		Fax:	
Email:		Email:	

Analysis Underway, details on the following page:

**Envirolab Services Pty Ltd**

ABN 37 112 535 645

12 Ashley St Chatswood NSW 2067

ph 02 9910 6200 fax 02 9910 6201

customerservice@envirolab.com.au

www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHsin Water	OCP in water	PCBs in Water	HM in water - dissolved
QW04	✓	✓	✓	✓	✓	✓

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.



CHAIN OF CUSTODY

ALS Laboratory:
please tick →

BRISBANE 32 Shand Street St Albans QLD 4053
Ph: 07 3242 7222 E: samples.brisbane@alsglobal.com

ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8559 0690 E: adelaide@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

NEWCASTLE 3/555 Mainland Rd Mayfield NSW 2304
Ph: 02 4014 2300 E: samples.newcastle@alsglobal.com

SYDNEY 277-280 Westmoreland Street, Sydney NSW 2114
Ph: 02 9784 8553 E: samples.sydney@alsglobal.com

CLIENT: Cavvanba Consulting

OFFICE: Byron Bay

PROJECT: 19038

ORDER NUMBER: 19038

PROJECT MANAGER: [REDACTED]

CONTACT PH: [REDACTED]

SAMPLER: [REDACTED]

SAMPLER MO: [REDACTED]

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): glen@cavvanba.com, ross@cavvanba.com

Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com

TURNAROUND REQUIREMENTS :

(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)

☐ Standard TAT (List due date):

☒ Non Standard or urgent TAT (List due date): 24 HR TAT

ALS QUOTE NO.:

SYBQ/409/18

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OP: 1 2 3 4 5 6 7

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:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE/TIME:

DATE/TIME:

DATE/TIME:

DATE/TIME:

DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).										Additional Information			
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <small>codes below</small>	<small>(refer to)</small>	TOTAL CONTAINERS	W-8 TRH (C6-C40)/BTEXN/PAH/OC/PCB/ 8 Metals	W-18 TRH (C6-C10)/BTEXN	ENVIROLAB	EnviroLab Services 12 Ashley St Chatswood NSW 2067 Ph: (02) 9910 6200	Job No:	Date Received:	Time Received:	Received by:	Temp: Coolant	Cooling: Icepack	Security: Intact/Broken/None	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
1	MW01	16/07/2019	Water	Amber, vials and plastic metals bottle		4	X												
2	MW02	16/07/2019	Water	Amber, vials and plastic metals bottle		4	X												
3	MW03	16/07/2019	Water	Amber, vials and plastic metals bottle		4	X												
4	MW04	16/07/2019	Water	Amber, vials and plastic metals bottle		4	X												
5	MW05	16/07/2019	Water	Amber, vials and plastic metals bottle		4	X												
6	QW03	16/07/2019	Water	Amber, vials and plastic metals bottle		4	X												
7	QW04	16/07/2019	Water	Amber, vials and plastic metals bottle		4													
							Please forward analysis to EnviroLab for TRH (C6-C40)/BTEXN/PAH/OC/PCB/ 8 Metals												
8	Trip Spike	15/07/2019	Water	vials		1		X											
9	Trip Blank	15/07/2019	Water	vials		1		X											

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; HSP = HCl Preserved Plastic; 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.